An Thinh Nguyen
Luc Hens *Editors*

Global Changes and Sustainable Development in Asian Emerging Market Economies Vol. 1

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Editors
An Thinh Nguyen
University of Economics and Business
Vietnam National University
Hanoi City, Vietnam

Luc Hens
Vlaamse Instelling voor Technologisch
Onderzoek (VITO)
Keerbergen, Belgium

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Chapter 1
Valuing Heritage as a Public Good: An Application of Zonal Travel Cost Method (ZTCM) in Hoi An, Vietnam

Bui Dai Dung, Nguyen An Thinh, Nguyen Thi Vinh Ha, and Nguyen Thi Hoa Hanh

Abstract In order to value an object that has no market price (such as heritage), non-market price methods will be used as a main solution, in which the demand curve of the valuated object shall be built based on reliable data and the total economic value of such object is measured by the area beneath the demand curve, which is called as the consumer surplus (CS). Literature review shows that almost all of valuation researches for heritages have built demand curves as those of private goods. We argue that heritages are high-purity public goods. A heritage valuation research would yield more accurate results if the demand curve could be built as that of a public good. This paper presents arguments of the superiority of the public good demand curve over that of private good in the scope of heritage valuation and initially applies for zonal travel cost method (ZTCM) in valuing Hoi An, a world heritage in Central of Vietnam, to look for evidences of such superiority. Evidences show that (1) the relationship between visits and travel costs could be represented with more accuracy by the public good's demand curve rather than the private good's one; (2) to build the demand curve for a world heritage (tourists are inhomogeneous), it requires additional techniques to minimize potential distortions, in which the purchasing power parity ratio (PPP ratio) has been used to adjust inconsistence of actual traveling costs; and (3) Hoi An has been valued at US $ 3,581,607,970 based on public good's demand curve, which is 73.85% higher than the value computed based on private goods' demand curve.

Keywords Heritage valuation · Public goods · Demand curves · Travel cost method (TCM) · Zonal travel cost method (ZTCM)

B. D. Dung (✉) · N. A. Thinh · N. T. V. Ha · N. T. H. Hanh
VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam

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1 Introduction

A heritage contains values that previous generations created or protected, maintained, and conferred to the next generations. It is not only the common property of a particular local community but also the property of a nation and of human beings in general. From time to time, heritages continuously bring about benefits for the economy and the people and need certain expenses for managing and maintaining to ensure their optimal benefits.

In order to avoid the shortage perception or the overexploitation of heritages, valuation of heritage is responsible for identifying and providing realistic information of its values to policymakers for sustainable protection and exploitation.

In order to value a heritage, economists have set up several methods and tools, in which the vital idea is how to build the demand curve of the valuated object and then compute the acreage beneath the demand curve which represents the consumer surplus or the value of the object. However, most of present studies approach the valuated object as a private good, in which the key idea is that the demand curve shall be summed up every demanded quantity horizontally.

This paper proposes a new approach to heritage valuation, based on a main argument that heritages are public goods. The valuation techniques would be changed fundamentally by building the demand curve as that of public goods rather than of the private ones. We initially apply this idea in the zonal travel cost method (ZTCM) and conduct the valuation research for Hoi An, Vietnam.

This is almost a new approach based on normative economics, which therefore may lead to controversial issues. We sincerely expect scientists and experts to give us constructive comments.

1.1 Literature Review

1.1.1 Heritage and Total Economic Values of Heritage

According to UNESCO, "Cultural heritage is the legacy of physical artifacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations." World heritages are classified into three groups: (1) cultural heritages, (2) natural heritages, and (3) mixed heritages. Heritages are also classified according to physical and intangible criteria. Cultural heritage objects include buildings and historical places, monuments, artifacts, etc. They have implications for archeology, architecture, science, or technology of a specific culture. Intangible cultural heritage is a spiritual product associated with community or individuals, objects, and cultural spaces concerned, with historical, cultural, and scientific values, kept by memory and words, written, and handed down by word of mouth, festivals, food, costumes, etc. Thus, the classification in terms of forms and the boundaries of the values of

heritages are only relative. The value of a physical cultural heritage includes the value of material artifacts and implies intrinsic intangible cultural value. On the other hand, the value of an intangible cultural heritage can also include values of the related artifacts in a certain range.

1.1.2 Total Economic Value of Heritage

Researchers have a great consensus on the economic values of heritages, including tangible and intangible values. Fairly uniform opinion is that the total economic value = use value + non-use value. (See Fig. 1.1).

Use value is the value brought about by the consumption of goods or services to satisfy human needs, including values from direct consumption and indirectly enjoyed values. Use value = direct use value + indirect use value.

Non-use value is the value that people assign to economic goods even if they never or will never use it. Non-use values include optional value, which is the value that individuals are willing to pay to maintain the property or resource even if there is little or no possibility that they will actually use it in the future; existence value, which is a rather controversial type of economic value, reflecting the benefits that people receive when knowing that an existed resource or something of value is in danger of extinction or disappearance in the future; and bequest value, which is the value set for the willingness of individuals to pay for the maintenance or preservation of an asset or resource that is not currently used, to preserve for future generations. Non-use value = option value + existence value + bequest value.

Based on the theory of total economic value of heritage, the valuation of heritage will be conducted, including data collection activities, using appropriate analytical tools to estimate value in terms of money in a complete and reliable manner.

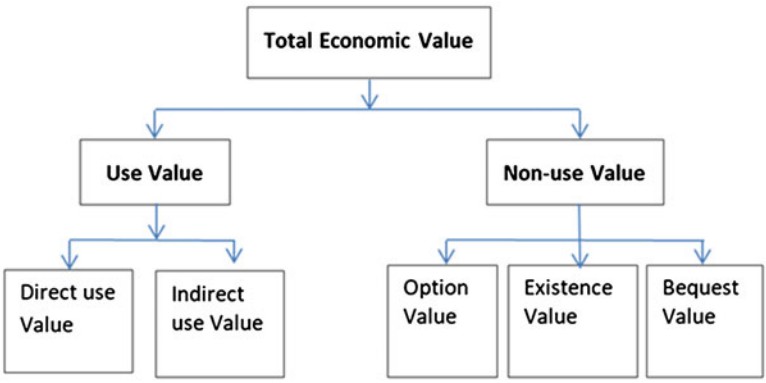

Fig. 1.1 Total economic value of heritage

1.1.3 Popular Valuation Methods Applicable to Heritage

Researchers divided the methods of economic valuation into three basic groups: (1) market-based valuation method, (2) non-market valuation method, and (3) benefit transfer method.

This article focuses on the non-market valuation methods, which can also be classified into two subgroups: (1) revealed preference methods (RPM) and (2) stated preference methods (SPM).

Typical characteristics of the popular valuation methods are summarized in Table 1.1.

1.2 Heritage - A Special Form of Public Goods

1.2.1 Characteristics of Heritage Public Goods

According to the consumption nature, some goods can be used separately, while some other can be used jointly. We can divide the world of goods and services into two categories, private goods and public goods, based on the two characteristics of rivalry and excludability (see Fig. 1.2). Public goods are weak in rivalry and difficult in excludability, and the non-rival and non-excludability goods are located at the extreme point of purity public good. On the opposite side, private goods are strong in rivalry and easy in excludability, and the complete rival and complete excludability goods are located at the extreme point of purity private good. The distance between these two extremes reflects goods that have decreasing public good purity or, vice versa, increasing private good purity.

Public goods are different to private ones by the following characteristics:

First, competitiveness is low in terms of consumption. When goods have this feature, the benefits of consumers do not compete or conflict with each other. If a person has used or consumed a good, this event does not affect other people's ability or actual consumption of the good.

Second, low level of excludability in terms of distributions. This means that owners of the goods, even if desired, are not capable or very expensive to exclude someone from using or consuming the goods once it is available in the market.

Third, a public good is provided on market at once with the entire cost right at the beginning (excluding maintenance fee). In this case, the marginal cost of public goods for one more consumer is zero (or negligible). The marginal cost curve of public goods goes from the original total price and runs parallel to the horizontal axis on graph.

Fourth, for low-purity public goods, the supply curve is fixed and parallel to the vertical axis. Congestion can occur when demand exceeds the maximum supply volume of public goods. In this case, fees should be applied to limit consumers to below the maximum supply. Therefore, congestible public goods should be provided with a reasonable fee to achieve optimal overall welfare.

Table 1.1 Description of economic valuation methods

Method group	Valuation method	Forest good or service valued	Value captured	Affected population captured	Benefits of method	Limitation of methods
Revealed preference methods	Market price	Those that are traded in markets, mainly resources (e.g., timber, fuelwood, cork, non-wood forest products)	Direct and indirect use	Users	Market data available and robust	Limited to market goods and services
	Cost-based	Mainly ecological services: soil protection, water protection, climate regulation	Direct and indirect use	Users	Market data available and robust	Can potentially overestimate actual value
	Hedonic pricing	Services that contribute to the quality of attributes of a certain market good, e.g., air quality, landscape aesthetics, and noise reduction	Direct and indirect use	Users	Based on market data	Very data intensive and limited mainly to data related to property
	Travel cost	All ecosystem services that contribute to recreational activities	Direct and indirect use	Users	Based on observed behavior	Limited to recreation and problematic for multiple destination trips
Stated preference method	Contingent valuation	All goods and services	Use and non-use	Users and non-users	Able to capture all use and non-use values	Potential bias in response, hypothetical market (not observed behavior), resource intensive
	Choice experiment	All goods and services	Use and non-use	Users and non-users	Able to capture all use and non-use values	Potential bias in response, hypothetical market (not observed behavior), resource intensive

Source: http://www.fao.org/3/a-i6117e.pdf, Jun. 8th 2019

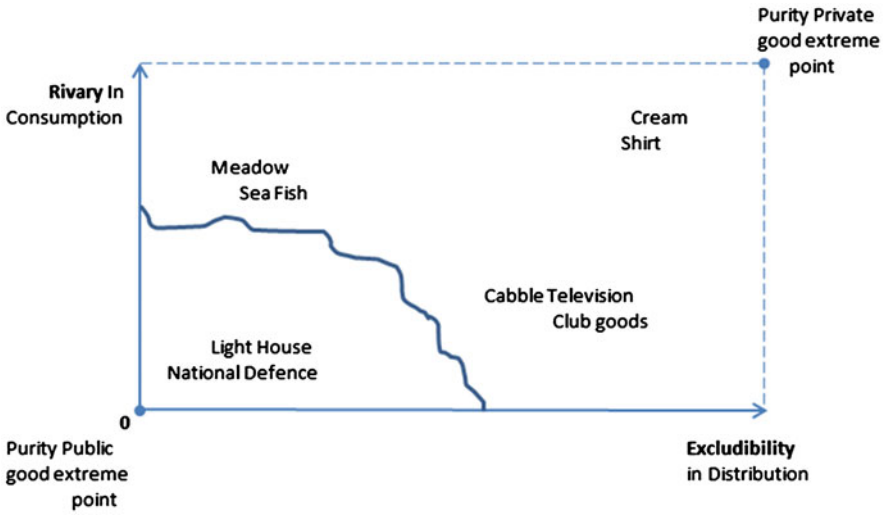

Fig. 1.2 Public goods vs private goods (Bui 2018)

Based on the above characteristics of public good concepts and the rationale for the total economic value of heritages, it can be seen that heritage is a type of congestible public goods. Let us consider each type of values of heritages as follows:

1. Direct use value of heritage can satisfy the needs for cultural enjoying of a large number of people at a time with low rivalry and excludability. Thus, the direct use value of heritage is a type of high-purity public goods.
2. Indirect use value of heritage is beneficial to those who have never used it or will never use it. Option value, existence value, and bequest value of a heritage are nearly non-rival and non-excludable. Thus, the indirect use value of heritage is rather high-purity public goods.

In short, heritage is a special form of public goods, in which the indirect use value is pure public goods; the direct use value is a less pure form of public goods, with congestible feature. The direct use value needs careful consideration in identifying the optimal exploitation point.

1.2.2 Demand Curves of Heritage as a Public Good

The demand curve for public goods is completely different from private ones. First of all, it should be emphasized that private goods are provided and demanded with unlimited quantities (Fig. 1.3).

The demand curve of a private good is identified by horizontally summing up demand quantities at each price level: $P = P1 = P2$; $Q = Q1 + Q2$.

In contrast, public goods are provided at a limited quantity for the whole society. The price of a public good is the aggregation of all prices that each individual in society is willing to pay for a certain amount of provided good (Fig. 1.4).

The rule to determine the market demand curve of a public good is to accumulate vertically the total prices that all individuals pay for a fixed volume of a public good: P = P1 + P2; Q = Q1 = Q2.

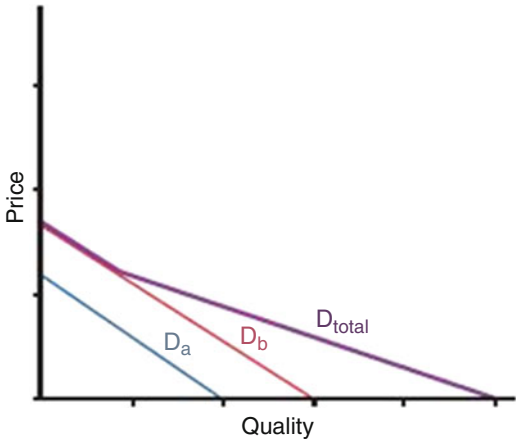

Fig. 1.3 Demand curves for private goods (Bui 2018)

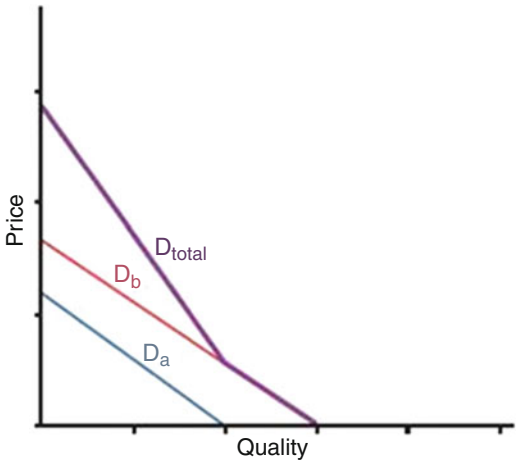

Fig. 1.4 Demand curves for public goods (Bui 2018)

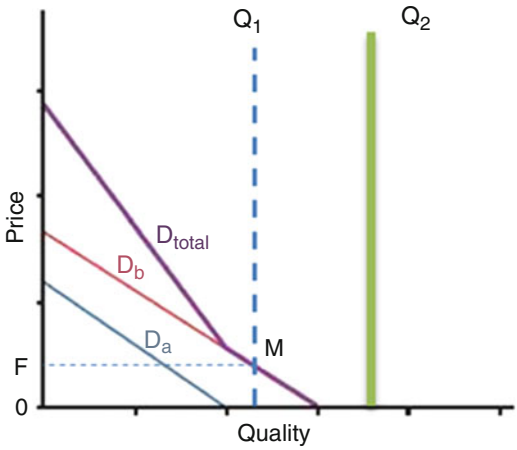

Fig. 1.5 Heritage public goods and congestion potential (Bui 2018)

Since heritage is a non-pure public good with a finite amount of supply at a specific time, congestion may occur if the total supply of heritage public goods is Q1. Fee to avoid congestion is Zero. No congestion would occur if the total supply of heritage public goods is Q2 (see Fig. 1.5).

2 Methodology

2.1 Zonal Travel Cost Method (ZTCM)

TCM (travel cost method) was first introduced by the economist Hotelling (1947) and was further developed by the economists Clawson and Knetsch (1966). To date, TCM is widely applied, especially to valuate the direct and indirect use values for landscapes and entertainment venues, thereby determining the value of these places. The value of a tourism site is defined based on arguments that an individual will spend an amount of money equivalent to the value of the place they visit. The value of that site is indicated by entrance ticket fee, round transportation costs, opportunity cost of travel time, opportunity cost of stay time, etc.

There are three approaches to TCM: zonal TCM, individual TCM, and random utility TCM. In the following, the article focuses on zonal TCM and individual TCM.

ZTCM has a single approach, mainly using secondary data, with some simple data collected from visitors and other statistical data. Zonal TCM is performed by following these steps:

1. Determine the zones around the tourist point/site by concentric circles or administrative/geographic boundaries. The longer the distance between regions, the higher the travel cost.

2. Gather information on number of visits from each zone to the visiting site in 1 year and some other data such as income, gender, age, education, etc.
3. Calculate the ratio of visits over 1000 residents in each zone.
4. Calculate the average cost of one round trip to the tourist site for each zone, including round transportation fees, cost of time, etc.
5. Determine the marginal benefit coefficient by regressing the number of visits/1000 residents with the average cost from each zone.
6. Build the demand function from the marginal benefit coefficient with the starting point being zero travel cost (assumed) corresponding to total number of visitors in the studied year.
7. Calculate the total value of the tourist site, which is the consumer surplus, from the newly established demand curve.

2.2 Limitations of Recently Applied Travel Cost Method

The limitations of the travel cost method have been pointed out by many researchers as follows:

1. For those who like to travel, traveling time is not a cost but a benefit. In this case, the cost of time should be deducted from travel cost, which means that the value of the entertainment area is overestimated.
2. Multiple destination journey: if an individual visits several places on the same day but is only interviewed by the TCM for one place, the analysts will incorrectly allocate the transportation cost.
3. Tourists don't have to spend money: the TCM ignores visitors who live very close to the entertainment area; they can walk there with no or very low cost, but they can highly appreciate the entertainment area.
4. The assumption of ZTCM is that the regional population is homogeneous. In fact, the diversity of interests and affordability of individuals in an area is no less than diversity in the global level.

In addition to the above limitations, ZTCM research practice also reveals other basic limitations as follows:

5. The basic idea of ZTCM in zoning (according to the distance from the original place of visitors to the tourist site) implies that the longer the distance, the higher the travel cost. Practice shows that this idea is not reasonable because the actual expenditures of visitors from the same zone are very different and the average costs of visitors from farther zones are sometimes lower than the average costs of closer zones. This fact makes it difficult to establish a demand curve.
6. ZTCM has not taken into account the difference in purchasing power of visitor groups from different countries. The economic theory indicates that a dollar of a person in low-income country is worth more than one dollar of an individual in a rich country. For international-level tourism expenditure, if this problem is not addressed, it is likely that the calculation results have a large error. So, this

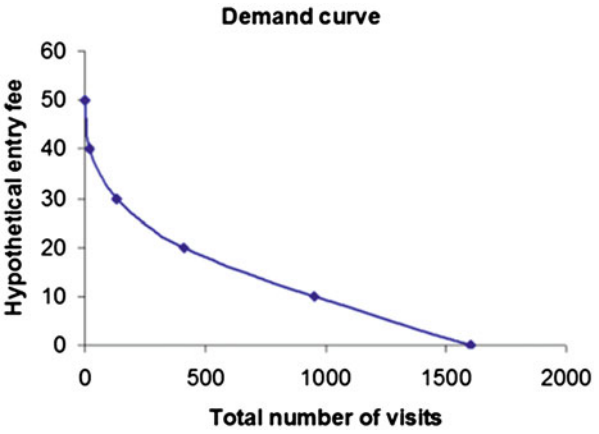

Fig. 1.6 Setting up the ZTCM demand curve (Source: ZTCM Guide of Aberystwyth University, UK. http://www.cbabuilder.co.uk/Home.html)

assumption is not convincing enough for division of visitors by zones. All visitors should face the same base for calculation of travel expenses.

Tourists may travel to many places in one trip. The diversity of the number of destinations and the length of stay at each place is a noise that makes it difficult to determine the travel cost of a specific destination (Fig. 1.6).

Many people have criteria for selecting a tourist destination that is not the place they have been to, since time and budget for tourism are limited, while the need to expand their knowledge to new places is a high priority. This is even more interesting in the global context, when the costs for a far trip and a relatively far one have no significant difference, as the ticketing time makes transportation costs seriously distorted. Moreover, the low cost of living in newly discovered tourist sites also distorts the principle of valuing travel costs by distance.

Other major limitations of ZTCM are to accept the number of actual visitors at a time or in a short period of time, there is no basis to criticize the situation or the risk of congestion, or to indicate the optimal number of tourists for the area.

3 Results

3.1 Valuing Heritage Using Traditional ZTCM to Serve as a Reference

As a world heritage site, visitors to Hoi An are divided into six zones, including Zone 0, domestic; Zone 1, Asia; Zone 2, Europe; Zone 3, Oceania; Zone 4, North America; and Zone 5, the remaining regions.

The ratio of visits per 1000 residents and the average cost per trip to the tourist site for each zone, including transportation cost (round trip) and the cost of time, are calculated with the following results (Table 1.2):

Table 1.2 Zoning tourists to Hoi An

Zone no.	Name of zone	Visits in 2018	Visits/1000 residents	Days in Hoi An	Exp./day, USD	Time opt. Cost/ day, USD
0	Vietnam	253,311	2.65	1.8	43.57	5.38
1	Asia	554,811	0.12	2.1	225.40	69.42
2	Europe	500,013	0.68	2.1	285.21	131.10
3	Oceania	142,427	3.72	2.1	405.50	130.03
4	North America	104,465	0.18	2.1	345.47	145.07
5	Other areas	161,451	0.09	2.1	285.21	116.91

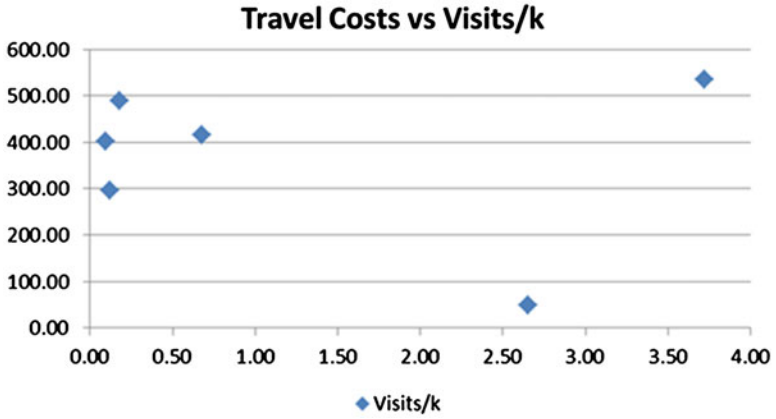

Fig. 1.7 Regression analysis to determine marginal benefits of visitors by zone

Information on the number of visitors from each zone to the tourist site and some other data such as income, gender, age, education, etc. are collected to determine the marginal benefit coefficient. Regressing the number of visits per 1000 residents from each zone with the average travel cost from the zone, we have the following results (see Fig. 1.7).

By theory and with the assumption that visitor behaviors are homogeneous, the higher the travel cost, the lower the demand and vice versa. However, the reality in Hoi An did not reveal this rule. We tried to integrate the number of visitors and travel costs of Asia and Oceania (because of their similar average distance), but the results were not better.

The facts in Hoi An allow for the conclusion that ZTCM is not suitable value a world heritage because the behaviors of visitors from various zones are very different. Because of these heterogeneous distortions, it is not possible to estimate the marginal benefit coefficient of visitors to build the demand function.

In case that the number of tourists and characteristics of tourist site satisfy the assumption of visitor behavior homogeneity, the valuation of tourism site following private good approach has still limitations for the following reasons:

First, it is not convincing to assume that all visitors in the survey year have the travel cost at zero and then the travel cost gradually increases to determine the number of corresponding visitors by demand function. In practice, it is difficult to accept a zero-travel cost, since there is always a transportation expenditure, even if the distance between the place of residence and the tourist site is very small. Moreover, the opportunity cost of travel time is the cost that no one can avoid.

Second, the horizontal sum of number of visitors or groups wrongly describes the nature of the visitors' demand for the tourism site. This relationship does not reflect a free demand and a free supply of a private good market. In fact, it is a relationship between infinite demands for a public good and a finite supply.

Third, the valuation of heritage using private good approach has no persuasive basis and does not bring the right message to managers. For policymakers, heritage should be understood as a limited resource, vulnerable to damage in case of overexploitation. It is completely different to a private good with free supply and demand.

3.2 Adjusting Traditional ZTCM to Overcome Noise when Travel Cost Is Not Correspondent to Distance

To overcome the abovementioned weaknesses when valuing a world heritage, the ZTCM is adjusted as follows:

1. Use purchasing power parity (PPP) to calculate the travel costs of visitors from different zones. It is noted that the costs are now indicated in terms of USD at the time of valuation.
2. Ignore the number of visits per individual (ITCM).
3. Ignore the zoning of visitors by distance to tourist site (ZTCM). Transportation expenses according to distance are calculated into the total travel expenses.
4. Run regression to find marginal benefit using individual data; it is the relationship between the total expenditure/day of each person and the corresponding number of people according to the survey data.
5. Vertically sum CS; the total value of the tourist site is equal to the total direct and indirect value (sum of TCM and CVM).

The ZTCM result is adjusted.

Step 1 Determine the distance from the starting place of visitors to Hoi An

With the statistics on tourists in Vietnam in general and in Hoi An in particular, the access to the number of tourists by nationality is favorable. In addition, within the same nationality, the group homogeneity is quite high, and this method helps reduce noise in the calculation process and evaluation. The collection of data on visitors,

classification and calculation of distance, transportation costs, and flying time gives the results (see Appendix 1).

Step 2 Calculate opportunity cost of time and purchasing power parities.

The aggregation of demand from various groups of visitors from many countries around the world requires the elimination or restriction of noise caused by differences in living standards among countries around the world. After testing some calculation models, PPP ratio is applied to solve the above situation. The reason for this solution is that the consumer surplus is more accurately reflected in terms of PPP, which is not the exact actual amount of money spent.

To identify the opportunity cost of time, this study only counts the time for transportation, not including the time of stay in Hoi An by visitors, since the number of stay days of international groups is not significantly different, at about 2.1 ± 0.2 days. The opportunity cost of time is calculated by hour, which is equivalent to an hourly wage, equal to 1/10 of the working day income. PPP conversion factor is calculated from the original data of WDI 2018 (see Appendix 2).

Step 3 Determine the travel costs for each group of tourists by nationality, and establish a demand curve to show the relationship between spending and the corresponding number of visitors (see Appendix 3).

According to the actual travel costs, we have the demand curve as described in Fig. 1.8.

According to the regression function $y = 2215–0.0014 * x$, the number of visitors y reaches maximum = 1,476,666 when $x = 0$ (see Fig. 1.8). In fact, the total number of visitors to Hoi An in 2018 was 1,716,478 people. This demand curve does not reflect closely with the actual data (Fig. 1.9).

According to PPP travel cost, we have the demand curve $y = 2401.8–0.0014 * x$.

In accordance with the regression function $y = 2401.8–0.0014 * x$, the number of visitors maximized at 1,715,571 people when $x = 0$. (See Fig. 1.9.) This figure is

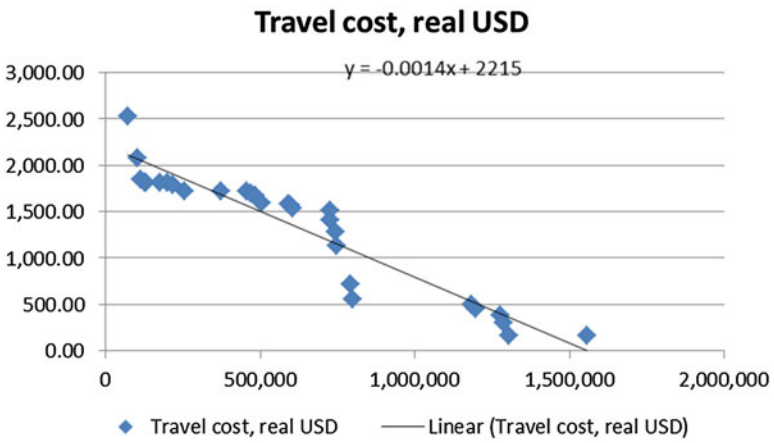

Fig. 1.8 Demand curve for Hoi An heritage at real travel cost

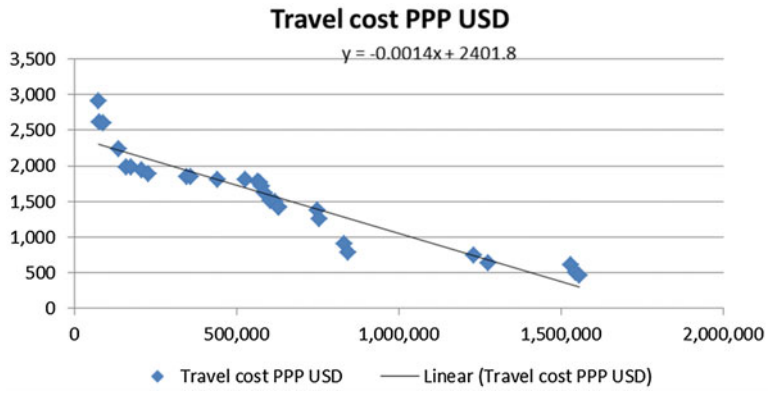

Fig. 1.9 Demand curve for Hoi An heritage at PPP travel costs

close to the actual number of visitors to Hoi An in 2018 of 1,716,478 people. This demand curve reflects reality better than the demand curve without taking into account the purchasing power parity mentioned above.

This result leads to recommendations that the use of PPP ratio to build the demand curve in case of visitors from many countries and currencies of countries that have different purchasing power will allow more reliable results.

If we value Hoi An using the traditional method, then we have the demand curve that cuts the horizontal axis at $x = 1{,}715{,}571$ and cuts the vertical axis at $y = 2401.8$. The total value of consumer surplus is 2,060,229,729. In other words, the value of Hoi An ancient urban area assessed by ZTCM according to the traditional approach is US $ 2,060,229,729 (2018).

3.3 Establish the Demand Curve Using Public Good Approach

The above results (see Sect. 3.2) show that when the demand curve is established with the private good approach, i.e., the number of visitors is accumulated horizontally in the same level of expenditure. Since heritage cannot be a seen as a private good, this approach can distort significant results.

To overcome such disadvantage, the following calculation process uses the public good approach to build the demand curve:

3.3.1 Valuing Heritage As a Public Good

Data of the Number Visitors and Travel Costs (Appendix 3) shows that there are three groups of tourists with different demand curves. It is necessary to simulate the

demand curves of these three groups according to the aggregate demand curve model of public goods, i.e., vertically accumulated, as follows:

Group 1: Travel cost PPP from 2906 to 1940. Group 1 regression function is set: $y = 3237.6–0.007 * x$.

Group 2: Travel cost PPP from 1, 889 to 1254. Group 2 regression function is set: $y = 2293.5–0.00\ 14 * x$.

Group 3: Travel cost PPP from 905 to 0. Group 3 regression function is set: $y = 1500.2–0.00\ 07 * x$.

The general regression function of all three groups is set as follows (see Fig. 1.10):

Table 1.3: Data computed according to three sub groups' equation

The total consumer surplus is the area under the aggregate demand curve, which is USD 4,255,724,958; or in other words, the economic value of Hoi An evaluated by new ZTCM approach is USD 4,255,724,958 (PPP time in 2018).

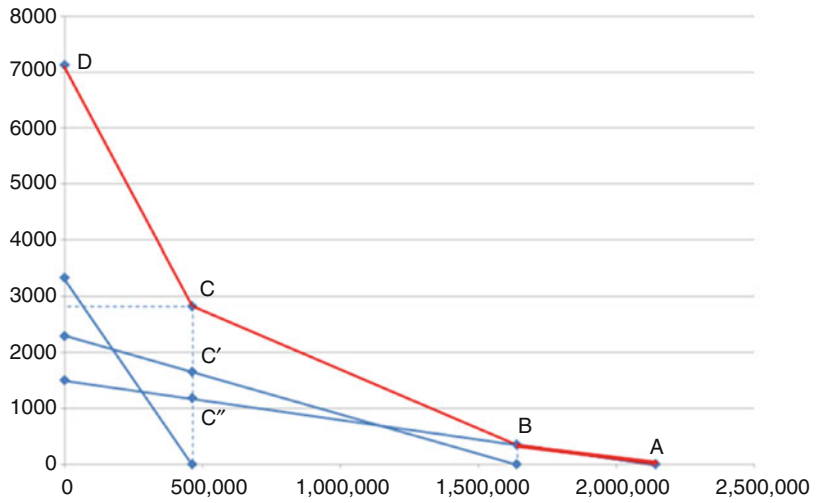

Fig. 1.10 ZTCM demand curve in public good approach

Table 1.3 Demand curves of three sub groups

Point A:	$y = 0$	$x = 2{,}143{,}143$
Point B:	$y = 353.45$	$x = 1{,}638{,}214$
Point C″:	$y = 1176.44$	$x = 462.514$
Point C′:	$y = 1645.98$	$x = 462{,}514$
Point C:	$y = 1999.43$	$x = 462{,}514$
Point D:	$y = 7121.3$	$x = 0$

Source: Data computed in accordance to sub-group demand curves' equation

4 Conclusion

The ZTCM needs to be considered for adjustment when applying to value areas that are incompatible with the assumption that visitors in each zone are homogeneous, especially when the valuated object is a world heritage with many groups of tourists from different regions, complicated trips, various levels of living conditions and traditions, etc.

Characteristics of statistic data in Vietnam allow us to conduct ZTCM by tourist groups classified by nationality. In order to get rid of these disturbances caused by inhomogeneous factors, this study proposes the use of PPP ratio to clear away as much as possible the gap generated by currency purchasing powers as well as actual living conditions among different countries.

Valuation of heritage needs to build the demand curve as that of public goods rather than of private goods. The aggregate demand curve shall be vertically sum up from groups' demand curves, in which each group had been identified by similar marginal utility. For Hoi An, tourists are divided into three groups with different demand curves' slopes, and the aggregate demand curve is summed up vertically from the three groups' demand slopes.

The demand curve setup based on the new approach reflects more closely to reality of tourist demands. In this research, traditional demand curve estimates of 1,476,666 visits when $x = 0$ (see Fig. 1.8). However, the number has been 1,715,571 visits after being adjusted by PPP ratio, which is able to reach additional amount of 16.18% to the first estimation and almost reflects the actual number of 1,716,478 visits (see Fig. 1.9).

The economic value of Hoi An, which has been valuated by the new ZTCM based on public good demand approach, is US $ 4,255,724,958 (PPP of 2018), with an additional increase of 206.6% in comparison to the value estimated by private good demand approach.

The public good demand approach has also been applied to ITCM and CVM as the subsequent parts of this paper.

Appendix 1: Distance, Transportation Costs, and Flying Time

	. . .to Hoi An	Distance, km	Airfare, USD	Flight hours
1	Hanoi/HCM	1000	160	4.00
2	Australia	7747	1240	17.49
3	Austria	8257	1321	18.51
4	Belgium	8993	1439	19.99
5	Canada	10,911	1746	23.82
6	China	2321	371	6.64

(continued)

	. . .to Hoi An	Distance, km	Airfare, USD	Flight hours
7	Denmark	8450	1352	18.90
8	Finland	7435	1190	16.87
9	France	9212	1474	20.42
10	Germany	8342	1335	18.68
11	Iceland	9368	1499	20.74
12	Indonesia	3440	550	8.88
13	Israel	7060	1130	16.12
14	Italy	8746	1399	19.49
15	Japan	3668	587	9.34
16	Korea	2739	438	7.48
17	The Netherlands	8895	1423	19.79
18	New Zealand	9891	1583	21.78
19	Norway	8371	1339	18.74
20	Portugal	10,424	1668	22.85
21	Russia	6741	1079	15.48
22	Singapore	2196	351	6.39
23	Spain	10,057	1609	22.11
24	Sweden	7894	1263	17.79
25	Switzerland	8868	1419	19.74
26	Taiwan	1665	266	5.33
27	Thailand	989	158	3.98
28	UK	9250	1480	20.50
29	USA	13,169	2107	28.34

Appendix 2: Time Opportunity Cost

No.	. . .to Hoi An	Income/day	PPP ratio	Income/hour
1	Hanoi/HCM	5.38	3.78	0.54
2	Australia	155.94	0.91	15.59
3	Austria	137.67	1.12	13.77
4	Belgium	127.90	1.09	12.79
5	Canada	140.71	0.93	14.07
6	China	21.25	2.35	2.12
7	Denmark	172.30	0.89	17.23
8	Finland	133.10	1.00	13.31
9	France	119.63	1.05	11.96
10	Germany	130.14	1.14	13.01
11	Iceland	142.75	1.11	14.27
12	Indonesia	11.74	3.05	1.17
13	Israel	95.31	1.17	9.53

(continued)

No.	. . .to Hoi An	Income/day	PPP ratio	Income/hour
14	Italy	96.96	1.19	9.70
15	Japan	134.03	0.89	13.40
16	Korea	73.32	1.51	7.33
17	The Netherlands	150.80	1.03	15.08
18	New Zealand	104.11	1.10	10.41
19	Norway	252.39	0.69	25.24
20	Portugal	65.03	1.44	6.50
21	Russia	32.13	2.31	3.21
22	Singapore	159.58	1.74	15.96
23	Spain	90.81	1.23	9.08
24	Sweden	156.80	0.93	15.68
25	Switzerland	215.93	0.87	21.59
26	Taiwan	68.56	1.51	6.86
27	Thailand	17.43	2.99	1.74
28	UK	117.77	1.08	11.78
29	USA	149.43	1.15	14.94

Appendix 3: Number of Visitors and Total Travel Costs

	Group of tourists	Visits, nation	Travel cost, real USD	Travel cost, PPP USD
1	USA	73,212	2530	2906
2	Russia	4512	1128	2612
3	Portugal	12,377	1816	2607
4	Spain	45,429	1810	2231
5	New Zealand	23,391	1809	1986
6	Iceland	17,305	1795	1984
7	Canada	31,253	2081	1940
8	Italia	19,738	1588	1889
9	UK	119,026	1721	1852
10	Belgium	13,087	1694	1843
11	France	82,177	1718	1805
12	Germany	85,694	1578	1805
13	The Netherlands	36,621	1722	1776
14	Austria	6810	1576	1764
15	Indonesia	6668	561	1709
16	Switzerland	10,105	1845	1614
17	Israel	15,054	1283	1504
18	Denmark	14,796	1678	1497
19	Sweden	9034	1542	1431
20	Finland	3296	1414	1416

(continued)

	Group of tourists	Visits, nation	Travel cost, real USD	Travel cost, PPP USD
21	Australia	119,036	1512	1370
22	Norway	4952	1812	1254
23	China	78,166	385	905
24	Singapore	12,641	453	789
25	Korea	386,080	493	746
26	Japan	44,187	712	631
27	Vietnam	253,311	162	614
28	Thailand	15,810	165	494
29	Taiwan	11,259	303	458

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Chapter 2
The Effects of Human Resource Management Practices on Organizational Commitment: The Case of Viettel Group

Thi Huong Dang and Thi-Ngoc Bich Chu

Abstract This paper explores the effects of human resource management practices on the employee commitment in Viettel Group. The framework is proposed based on inheriting and adjusting from previous empirical studies. Data were collected from 270 employees in Viettel Group through a questionnaire survey from February to April 2019 and processed by SPSS. The result shows that Training, Performance Appraisal, Compensation, Career Planning, and Employee Participation have positive effects on employees' commitment at Viettel Group. Based on these results, the article proposes some suggestions to enhance the commitment and attachment of Viettel Group's employees to the organization.

Keywords Human resource management practices · Organizational commitment

1 Introduction

In today's turbulent business environment, human resources are among the most valuable assets of any organization, determining the success of the organization. With their knowledge and endless creativity, human resources are important success factors contributing to organizations' competitive advantages (Barney, 1991; Singh, 2004). Therefore, organization's strategies have recently been focusing on improving human resource management (HRM) practices to achieve sustainable development.

This, however, implies fiercer competition for high - quality workers. Maintaining the workforce, especially high-quality ones, is becoming increasingly

T. H. Dang (✉)
University of Economics and Business, Vietnam National University, Hanoi, Vietnam
e-mail: huongdth@vnu.edu.vn

T.-N. B. Chu
Viettel Group, Hanoi, Vietnam

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difficult. In order to succeed, organizations need to know how to retain employees, to strengthen organizational commitment, and to avoid the phenomenon of "the grass is always greener on the other side" – the desire of employees to switch from one company to another. Retaining the workforce by organizational commitment rather than by contract or by sanctions is considered a new sustainable, humane trend, which brings more value to the organization.

To testify this fact, researches about the linkage between HRM practices and organizational commitment have recently gained high attention. Authors have identified evidence of HRM practices on organizational commitment in various organizations, and they have found their substantial positive influence. In Vietnam, however, few studies have been conducted, especially taking into consideration different types and sizes of organizations. Our purpose, therefore, is to fill this gap. We analyze and assess influential factors on organizational commitment in order to provide useful suggestions. Our results will further provide additional hints on the linkage between HRM practices and organizational commitment in various types of organizations in Vietnam.

2 Conceptual Framework and Hypotheses

2.1 Literature Review

Globally, many researches have focused on HRM and the effects of HRM practices on performances and on organizational commitment.

Noe et al. (2006) state that HRM refers to the policies, practices, and systems that affect the relationship between the organization and its employees. HRM includes the practices that are designed to provide and coordinate the human resources of an organization. HRM is considered as the crucial practice of improving the close relationship between employers and employees (Farnham & Pimlott, 1990). Guest (1997) and Pfeffer (1998) describe the main dimensions of HRM practices: selection (selective hiring of new personnel), training, appraisal, rewards, job design, involvement, status, and security and sharing (extensive sharing of financial and performance information throughout the organization). Guest (1997) notes that the commitment and involvement of employees play an important role in HRM practices. Other studies, for example, Ramlall (2003) and Singh (2004), analyze the elements of HRM practices too; both authors point out that these practices are closely linked to achieve the goal of establishing and retaining high-quality, committed human resources for an organization. Singh (2004) further states that all practices are equally important and each of them needs to work well to complement each other. Tran (2011) studies HRM practices in Vietnam and indicates 12 functions of HRM; she concludes that if these functions work well, HRM will obtain better results and the commitment of employees will be strengthened and it will become more effective.

Regarding organizational commitment, Mowday et al. (1979) affirm that organizational commitment is the relative strength of an individual's identification with, and involvement in, a particular organization. According to the authors, organizational commitment can be characterized by three factors: a strong belief in, and acceptance of, the organization's goals and values, a willingness to exert considerable effort on behalf of the organization, and a strong desire to maintain membership in the organization. For brevity, they are stated, respectively, as belief, effort, and loyalty. Guest (1994) and Legge (1995) confirm this view, stating that the commitment of employees plays a crucial role in HRM practices. Commitment, rather than being obedient due to a controlled system, is built on belief and mutual trust generated in the working environment. The papers of Meyer and Allen (1991) and Northcraft and Neale (1996) agree that the commitment of employees to the organization is meant to be a loyal and positive work attitude combined with the wish of remaining in the organization. Furthermore, they also mention a shared belief and acceptance of the organization's target and values as a primary element of commitment.

Several researches put in evidence the linkage between HRM practices and organizational commitment, for instance, Ritzer and Trice (1969), Meyer and Smith (2000), Paul and Anantharaman (2004), and Browning (2006). Particularly, Ritzer and Trice (1969) find a positive relationship between compensation-benefit packages and the commitment of employees. Bartlett (2001) confirms that training activities are positively associated with the commitment of employees. Meyer and Smith (2000) find a significant impact of career development, appraisal employees' performance, and compensation on the commitment of employees. Paul and Anantharaman (2004) identify the link between HRM and organizational commitment in the software industry in India. Browning (2006) analyzes the impact of HRM practices on the commitment of employees in service companies in South Africa. Payne and Huffman (2005) stress the link between HRM practices and turnover rate. Employees quit often when they feel to have no perspectives even if they commit or if they feel the organization does not keep its promises. Studies of Shahnawaz and Juyal (2006) and Kun et al. (2008) also find a positive association between HRM practices and organizational commitment in consultancy, research, fashion, and IT industry in China.

In Vietnam, some few studies on the relationship between HRM practices and organizational commitment have been conducted. Ho and Pham (2012) find a relation between the support in the workplace and the commitment of employees. Pham and Nguyen (2013) point out the connection between compensation, career development opportunities, job definitions, and organizational commitment. The paper of Nguyen (2015), by using random samples collected from many companies, shows that HRM practices have, on average, a positive impact on organizational commitment in all its three main aspects (normative commitment, continuance commitment, and affective commitment).

In short, previous studies have found the positive link between HRM practices and organizational commitment. The number of researches in Vietnam, however, is rather exiguous, particularly studies considering different businesses and

organizations operating in foreign markets. The present study aims at filling the gap by providing evidence on the linkage between HRM practices and organizational commitment in Viettel Group. We believe these results are important given the present high level of competition for human resources in a developing country like Vietnam, requiring organizations to pay more attention on employees.

2.2 *Research Model and Hypotheses*

The conceptual framework of this study is based on the findings of previous researches about the link between HRM practices and organizational commitment. Seven dimensions of HRM practices are adopted from the studies of Guest (1997), Pfeffer (1998), and Singh (2004). These dimensions have been modified in the study of Tran and Van (2006) for the case of Vietnam. These seven dimensions of HRM practices include Job Definition, Selection, Training, Performance Appraisal, Compensation, Career Planning, and Employee Participation.

Measurements of organizational commitment have been developed by Mowday et al. (1979) and have been subsequently modified in the work of Tran (2006) to adapt to the Vietnamese case. Three aspects of commitment are Loyalty, Pride, and Effort. This study further includes Willingness as an additional measure for organizational commitment since Willingness is considered as the strongest expression of employee's commitment and fulfillment. This indicator is particularly relevant to Viettel Group's culture; it is added based on theory and on the results of interviews with ten researches, experts, managers, and employees of Viettel Group.

Figure 2.1 shows the framework of the link between HRM practices and organizational commitment.

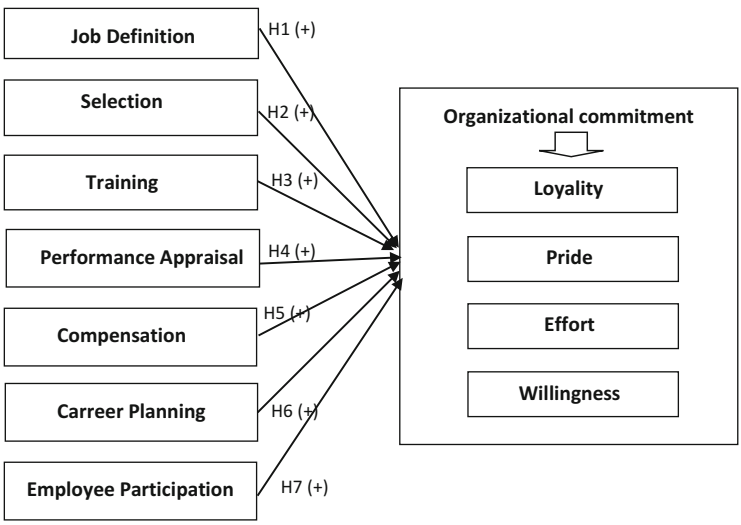

Fig. 2.1 Research model (Source: Based on previous studies and authors' proposal)

2.3 Research Hypotheses

From the theories and conceptual framework, we propose seven hypotheses as below:

H1 Job Definition has a positive effect on organizational commitment.

H2 Selection has a positive effect on organizational commitment.

H3 Training has a positive effect on organizational commitment.

H4 Performance Appraisal has a positive effect on organizational commitment.

H5 Compensation has a positive effect on organizational commitment.

H6 Career Planning has a positive effect on organizational commitment.

H7 Employee Participation has a positive effect on organizational commitment.

3 Methodology

3.1 Measurement and Questionnaire

Seven dimensions of HRM practices and measurement instruments are adopted from the studies of Guest (1997), Pfeffer (1998), and Singh (2004). They then have been modified in the study of Tran and Van (2006) for the case of Vietnam, in which Job Definition was measured by four items, Selection with four items, Training with five items, Performance Appraisal with five items, Compensation with four items, Career Planning with five items, and Employee Participation with three items. Meanwhile, organizational commitment is described by four factors: Loyalty, Pride, Effort, and Willingness. The first three factors (Loyalty, Pride, Effort) have been developed Mowday et al. (1979) and then have been modified by Tran (2006), while the Willingness factor has been firstly introduced in this study after thorough interviews with ten experts of HRM, executives inside and outside of Viettel Group. Each factor was represented by three items slightly changed to be more suitable for this study.

The statements were then assessed by respondents based on a five-point Likert scale where 1 indicates "strongly disagree" and 5 indicates "strongly agree." The questionnaire has been first tested on 30 employees of Viettel Group to ensure its intelligibility and clearness. After collecting employees' comments, the questionnaire has been further adapted and used for the official survey.

3.2 Sampling and Data Collection

The official survey was conducted at Viettel Group. This is Vietnam's largest telecommunications group, 100% state-owned and operated by the Ministry of

Defense. The group is considered as one of the fastest-growing telecommunications companies in the world. Measured by subscribers, it is among the top 15 global telecommunications companies. By revenues, it is ranked in the top 40 global telecommunications companies. Viettel Group currently invests in 10 countries across 3 continents (Asia, America, and Africa), with a total population of more than 240 million people. By 2020, it will expand the investment to markets with a population of 400–500 million people, and it will rank in the top 10 global telecommunications companies.

Convenient sampling was used to conduct the survey. To ensure the representativeness of the sample, we followed Hair et al. (1992), according to which the sample size should be five times the number of the variables. In this study, we use 42 observed variables for assessment of HRM practices and organizational commitment; therefore, the sample size is estimated around 210. The actual number of questionnaires sent out was 300.

In order to guarantee the objectivity of data, the research team committed that all responses were kept confidential. The survey data were only used for research purpose of this study. Respondents were not requested to provide their name, phone number, and email in the questionnaire. The authors also comply with the ethics in research by declaring not to provide the demographic information of respondents to any other parties.

The official survey was conducted from February to April 2019 through various methods: online survey on the Google Forms platform, email survey, and direct paper questionnaires. A total of 283 questionnaires were collected, in which 270 were valid for the study (response rate 90%). The data were coded, entered, cleaned, processed, and analyzed using the statistical software SPSS.

4 Results

Among the 270 questionnaires that were returned completed, 64.4% were answered by male respondents and 35.6% by female. This ratio is in line with the typical gender distribution of technology and telecommunications enterprises. In terms of employment duration, 14.1% of respondents have worked at the company for "less than 3 years," 54.5% for "between 3 and 5 years," and 31.5% for "more than 5 years."

Cronbach's alpha test is used to assess the reliability of the variables and the scales. Most seven dimensions of HRM practices and the four dimensions of organizational commitment had Cronbach's alpha coefficient greater than 0.7 (Table 2.1); all 42 scales had corrected item-total correlation greater than 0.5. Therefore, all variables and scales in the proposed model can be considered reliable (Nunnally & Bernstein 1994).

The results of exploratory factor analysis (EFA) show that the KMO (Kaiser-Meyer-Olkin) value is equal to 0.885 with a significance level of 0.000. Considering

Table 2.1 Cronbach's alpha

Variables	Cronbach's alpha	No. of items
1. Job definition	0.765	4
2. Selection	0.69	4
3. Training	0.878	5
4. Performance appraisal	0.872	5
5. Compensation	0.841	4
6. Career planning	0.861	5
7. Employee participation	0.847	3

Source: own compilation

that Hair et al. (1992) propose a lower threshold of 0.5 for reliability, our results indicate that using EFA in this study is appropriate.

The rotated component matrix result shows that rotation converges in 42 variables, in which 30 variables belong to the 7 factors of HRM practices and the remaining 12 variables belong to the 4 factors of organizational commitment. The Pearson correlation coefficients, with significance level < 0.05, suggest that the correlation between the independent and the dependent variables is statically significant (Table 2.2).

The preliminary test for multicollinearity indicated that multicollinearity was likely to be an issue, since VIF (Variance inflation factor) values for the variables Job Definition and Performance Appraisal were greater than 2. To solve this, the variable Job Definition, that had the largest VIF value, was removed from the model. We have then re-run the model finding that the remaining variables have VIF values lower than 2, thus excluding further problems of multicollinearity (Table 2.3).

4.1 Regression Results for the Loyalty Factor

The results of our regression (Table 2.4) show that Training, Compensation, Career Planning, and Employee Participation do have an effect on the Loyalty of Viettel Group's employees (adjusted $R^2 = 0.356$, F value = 25.752, p value <0.01). Moreover, the Employee Participation factor has the largest impact. In fact, supporting employees to participate in common activities is a strength point of Viettel Group. Employees who join common activities tend to have a feeling of being part of the organization, and they become increasingly attached to the organization. They are likely to regard the organization as their family and tend to make more efforts at work to become an important member of the organization. Training and Career Planning are activities that help employees to improve their capacity and long-term career development orientation. In general, when these activities are well-implemented, they tend to increase employees' trust in the organization, create employees to strive, and improve their long-term efforts. Compensation, however, has a negative impact on Loyalty. This can be explained by the fact that

Table 2.2 Correlations among the variables

N	1	2	3	4	5	6	7	8	9	10	11
1. Job definition	1	0.534[a]	0.405[a]	0.326[a]	0.273[a]	0.476[a]	0.163[a]	0.250[a]	0.228[a]	0.264[a]	0.161[a]
2. Selection		1	0.492[a]	0.547[a]	0.343[a]	0.570[a]	0.278[a]	0.406[a]	0.339[a]	0.332[a]	0.214[a]
3. Training			1	0.546[a]	0.434[a]	0.433[a]	0.148[b]	0.389[a]	0.279[a]	0.294[a]	0.133[b]
4. Performance appraisal				1	0.590[a]	0.454[a]	0.191[a]	0.237[a]	0.328[a]	0.413[a]	0.185[a]
5. Compensation					1	0.386[a]	0.247[a]	0.136[b]	0.227[a]	0.206[a]	0.214[a]
6. Career planning						1	0.124[b]	0.325[a]	0.223[a]	0.320[a]	0.128[b]
7. Employee participation							1	0.466[a]	0.565[a]	0.392[a]	0.550[a]
8. Loyalty								1	0.567[a]	0.514[a]	0.447[a]
9. Pride									1	0.535[a]	0.488[a]
10. Effort										1	0.452[a]
11. Willingness											1

Source: own compilation

[a]Correlation is significant at the 0.01 level (two-tailed)

[b]Correlation is significant at the 0.05 level (two-tailed)

Table 2.3 VIF coefficients

Model		Unstandardized coefficients		Standardized coefficients	T	Sig.	Collinearity statistics	
		B	Std. error	Beta			Tolerance	VIF
	(constant)	0.452	0.121		3.724	0.000		
	Selection	0.046	0.051	0.047	0.902	0.368	0.717	1.394
	Training	0.117	0.042	0.156	2.788	0.006	0.619	1.615
	Performance appraisal	0.141	0.049	0.174	2.853	0.005	0.525	1.905
	Compensation	−0.114	0.049	−0.133	−2.355	0.019	0.607	1.646
	Career planning	0.108	0.045	0.132	2.413	0.017	0.648	1.542
	Employee participation	0.485	0.039	0.566	12.364	0.000	0.927	1.078

Source: Own compilation

Table 2.4 Regression results for factor Loyalty

Model	Standardized coefficients – beta	t	Sig.
(constant)		1.134	0.258
Selection	0.004	0.073	0.942
Training	0.317**	5.090	0.000
Performance appraisal	−0.003	−0.042	0.966
Compensation	−0.189**	−3.010	0.003
Career planning	0.206**	3.385	0.001
Employee participation	0.441**	8.668	0.000
R^2	0.370		
Adjusted R^2	0.356		
F	25.752 (sig. = 0.000)		

a. Dependent variable: Loyalty
The ** and * indicate the significance level at 0.01 and 0.05, respectively
Source: own compilation

compensation and reward systems, if done properly, may attract and encourage employees; however, when compensation is the only rewarding mechanism, employees may be less willing to remain in the organization.

4.2 Regression Results for the Pride Factor

Table 2.5 shows that Performance Appraisal and Employee Participation have a positive impact on the Pride factor of Viettel Group's employees (adjusted R2 = 0.372, F value = 27.554, p value <0.01). Assessing employees' performance, if done well, makes them feel respected and appreciated so that they tend to be

Table 2.5 Regression results for factor Pride

Model	Standardized coefficients – beta	t	Sig.
(Constant)		2.397	0.017
Selection	0.044	0.778	0.438
Training	0.098	1.594	0.112
Performance appraisal	0.193**	2.896	0.004
Compensation	−0.086	−1.392	0.165
Career planning	0.041	0.683	0.495
Employee participation	0.523**	10.422	0.000
R^2	0.386		
Adjusted R^2	0.372		
F	27.554 (sig. = 0.000)		

a. Dependent variable: Pride
The ** and * indicate the significance level at 0.01 and 0.05, respectively
Source: own compilation

prouder of their work. Supporting employees to join common activities will increase connection, willingness to share, collaboration, and support among employees. Other practices of HRM do not have statistically significant effect on Pride.

4.3 Regression Results for Effort Factor

Table 2.6 shows the positive effect of HRM practices on the Effort factor of Viettel Group's employees (R^2 = 0.296, F value =19.807, p value <0.01). In details, Performance Appraisal, Career Planning, and Employee Participation positively affect Effort. In particular, Performance Appraisal and Employee Participation have the highest coefficient magnitude, indicating that these factors have the largest impact on Effort. Compensation has a negative influence on Effort too. This again suggests that compensation and reward systems do not seem to have positive impact on the commitment of employees. The organization is not likely to retain highly qualified workforce if it only focuses on a well-implemented compensation system.

4.4 Regression Results for Willingness Factor

The relationship between HRM practices and the aspect of Willingness of organizational commitment is shown in Table 2.7 (adjusted R^2 = 0.298, F value = 20.029, p value <0.01). Notably, the Employee Participation factor has a statistically significant and positive impact on Willingness. This implies that in Viettel Group, organizational culture and positive work environment have important impact on organizational commitment. Moreover, encouraging employees to participate in common activities will improve their connection and make them willing to share,

Table 2.6 Regression results for factor Effort

Model	Standardized coefficients – beta	t	Sig.
(constant)		2.813	0.005
Selection	0.059	0.971	0.332
Training	0.047	0.727	0.468
Performance appraisal	0.338**	4.792	0.000
Compensation	−0.167*	−2.550	0.011
Career planning	0.141*	2.221	0.027
Employee participation	0.335**	6.307	0.000
R^2	0.311		
Adjusted R^2	0.296		
F	19.807 (sig. = 0.000)		

a. Dependent variable: Effort
The ** and * indicate the significance level at 0.01 and 0.05, respectively
Source: own compilation

Table 2.7 Regression results for factor Willingness

Model	Standardized coefficients—beta	t	Sig.
(Constant)		4.623	0.000
Selection	0.051	0.847	0.398
Training	−0.013	−0.206	0.837
Performance appraisal	0.045	0.642	0.521
Compensation	0.048	0.734	0.463
Career planning	0.005	0.084	0.933
Employee participation	0.523**	9.856	0.000
R^2	0.314		
Adjusted R^2	0.298		
F	20.029 (sig. = 0.000)		

a. Dependent variable: Willingness
The ** and * indicate the significance level at 0.01 and 0.05, respectively
Source: own compilation

cooperate, and support each other in the workplace. This is a necessary practice for a corporation operated by the Ministry of Defense where employees must strictly comply with the work assignments even when they are difficult to fulfill. For other factors, however, we do not find any statistically significant effect on organizational commitment.

Recapitulating, the regression results have shown that several HRM practices, namely, Training, Performance Appraisal, Employee Participation, Compensation, and Career Planning, all have significant influence on organizational commitment at Viettel Group. Hypotheses H3, H4, H5, H6, and H7 are accepted. Job Definition and Selection are not statistically significant; therefore, hypotheses H1 and H2 are not accepted. These results certify the positive link between HRM practices and organizational commitment. In consequence, the effective way to improve organizational commitment is to focus on HRM practices. Investing in HRM practices will

strengthen organizational commitment, thereby bolstering employees' work efficiency and productivity.

5 Conclusions and Recommendations

The study was conducted to analyze the linkage between HRM practices and organizational commitment at Viettel Group – the largest telecommunications group in Vietnam. It was based on the findings and theoretical background provided by previous researches and was adapted to the context of Vietnam. The main findings in this study show the positive impact of HRM practices on organizational commitment at Viettel Group. To enhance organizational commitment in the context of increasingly fierce competition, organizations need to invest and implement effectively HRM practices such as Training, Performance Appraisal, Career Planning, and Employee Participation. The study results also indicate some suggestions for Viettel Group to strengthen organizational commitment:

Firstly, the organization should focus on building an organizational culture and a positive work environment; support employees to participate in common activities; and improve the relationship between employers and employees, thus fostering the development of close, friendly, and supportive relationships at work. These factors highly affect organizational commitment. As a defense economic enterprise, the working environment requires strict obedience to the orders. This strongly shapes the type of relations existing between employers and employees at Viettel Group. To strengthen organizational commitment, therefore, employers need to focus on building relationships and maintain regular common activities.

Secondly, employers need to implement better training and development activities and career planning. In particular, although Viettel is already known as an organization with a good training culture that strongly focuses on this aspect, it should foster the building of employees' career paths. To make employees more committed, the organization needs to regularly renovate training programs and content and to design intensive professional training programs. Furthermore, it should focus on assignments and build a development roadmap for employees.

Thirdly, implementing a compensation system linked with performance assessment is an important factor in order to guarantee employees' long-term commitment to the organization. The recent development of the information technology industry as well as the fierce competition for highly qualified workforce in this field is highly attracting attention. Focusing on building sustainable human resources policies and committing to retain the workforce will create a good feeling in the employees, making them feel secure and committed to the organization. In addition, the performance evaluation criteria need to be clear and well declared. The company should associate salaries, bonuses, and benefits with work performance to make employees feel that they are evaluated fairly and recognized. This is an opportunity for employees to promote their talents and knowledge, motivating them to be more committed to the organization.

In summary, the results of this study support the positive impact of HRM practices on organizational commitment at Viettel Group. It provides more understanding of this linkage in the largest telecommunications group in Vietnam, and it contributes further evidence for the existence of this linkage in developing countries. However, due to the small sample size, some aspects of HRM practices are not statically significant.

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Chapter 3
Impacts of Economic Freedom on Economic Growth in Developing Countries

Dao Thi Bich Thuy

Abstract The purpose of this study is to investigate the impact of economic freedom on economic growth. The study is conducted with 65 developing countries worldwide in the period from 1995 to 2014. The Index of Economic Freedom published by the Heritage Foundation is employed at both overall level and dimensional level that comprises nine sub-indices. The finding reveals that economic freedom is a growth stimulus factor as a higher degree of economic freedom results in a faster economic growth. At the dimensional level, seven out of nine economic freedom sub-indices show statistical effects on economic growth, of which five have positive and two have negative growth effects. Business freedom, government integrity, trade freedom, tax burden, and government spending are among the positive growth effect factors. Investment freedom and property rights show negative effects on economic growth, while monetary freedom and financial freedom have statistically insignificant effects. This finding suggests developing countries would experience higher economic growth when there is improvement in business freedom, higher government integrity and trade freedom, less tax burden and lower size of government spending, less freedom in investment outflows, and weak property rights.

Keywords Economic growth · Economic freedom index · Developing countries

1 Introduction

Economic growth has always been at the heart of economic policy discussions, especially for developing countries, as a higher growth performance results in greater national output, potentially higher living standards for people, and an enhanced ability to attain various economic and social objectives. Among the

D. T. B. Thuy (✉)
VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam
e-mail: thuydaokt@vnu.edu.vn

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many determinants of economic growth, interest is focused on economic freedom. As Friedman, foreword in Gwartney et al. (1996), views, "free societies have arisen and persisted only because economic freedom is so much more productive economically than other methods of controlling economic activity." Conceptually, economic freedom refers to the level of freedom that individuals, entrepreneurs, and businesses have to use their time and money in the way that they feel is best for them and free from unnecessary government restrictions and predation. Economic freedom is believed to foster economic growth by affecting incentives, productive effort, and effectiveness of resource use (Erdal, 2004).

There are various efforts to quantify economic freedom, and among them, the two most popular indexes are the Fraser Institute's Economic Freedom Index and the Index of Economic Freedom produced by the Heritage Foundation. The Fraser Institute defines economic freedom as composed of personal choice, voluntary exchange, freedom to compete, and protection of person and property. The Fraser Institute's Economic Freedom Index is established under five main dimensions which are size of government, legal structure and security of property rights, access to sound money, freedom to trade internationally, and regulation of credit, labor, and business. The Heritage Foundation defines economic freedom as "the absence of government coercion or constraint on the production, distribution or consumption of goods and services beyond the extent necessary for citizens to protect and maintain liberty itself." In other words, people are free to work, produce, consume, and invest in the ways they feel are most productive. The Heritage Foundation Index of Economic Freedom is constructed based on the 4 pillars with 12 categories including rule of law (property rights, judicial effectiveness, and government integrity), government size (tax burden, government spending, and fiscal health), regulatory efficiency (business freedom, labor freedom, and monetary freedom), and market openness (trade freedom, investment freedom, and financial freedom).

The relation between economic freedom and economic growth has received a great attention in literature. At the overall level of economic freedom, a positive relation between economic freedom and economic growth is found in many researches (Wu & Davis, 1999; Gwartney et al., 1999; De Haan & Sturm, 2000; Hanson, 2000; Heckelman, 2000; Vega & Alvarez, 2003; Razmi & Refaei, 2013; Akin et al., 2014; Gorlach & Roux, 2015; Mehnatfar et al., 2015; Nadeem et al., 2019).

At the disaggregated level of economic freedom, the outcome shows rather conflicting results. Based on the Fraser Institute's Economic Freedom Index, Carlsson and Lundström (2002) studied 74 countries for the period 1975–1995 and found a positive effect on economic growth of only legal structure and freedom to use alternative currencies, while smaller government, in terms of consumption, transfers, and taxes, is harmful to economic growth. Justesen (2008) found that a small size of government and less regulation of business are factors enhancing economic growth.

Using 17 Middle East and East Asian countries' data during 2000–2009, Razmi and Refaei (2013) showed that legal structure and security of property rights, freedom to trade internationally, and regulation of labor, credit, and business are positively related to economic growth; however, government size and access to sound money show a negative growth effect.

The study by Akin et al. (2014) for 94 different countries grouped into 5 different income groups to cover the period from 2000 to 2010 revealed that the size of government is found to have a positive and statistically significant impact in upper-middle- and lower-middle-income groups, while it is not significant in high- and low-income groups. Legal system and property rights have a positive impact for all income groups. Sound money is positively related to economic growth only in high-income OECD and in lower-middle-income groups. Trade freedom has a negative effect in high-income group but a positive effect in low-income group. And only in high-income OECD and low-income groups, there is a positive and significant relation between regulation freedom and economic growth.

Gorlach and Roux (2015) investigated the relationship between economic freedom and economic growth for 13 SADC countries from 2000 to 2009 and concluded that all 5 components which are size of government, legal structure and security of property rights, access to sound money, freedom to trade internationally, and regulation of labor, credit, and business are highly significant and positively related to economic growth, but yet the magnitude of the coefficients varies.

Nadeem et al. (2019) analyzed the relationship between economic freedom index and GDP per capita growth of five South Asian countries over the period of 1990–2015. The study found a positive relation between GDP per capita growth and economic freedom. However, while size of government, property rights protection, trade freedom, and regulations positively affect economic growth, monetary freedom shows a negative effect.

Using the Heritage Foundation Index of Economic Freedom, in his study for OECD nations in the 2003–2007 period, Cebula (2011) found a positive relation between the growth rate of per capita real GDP and six forms of economic freedom which are fiscal freedom, business freedom, monetary freedom, property rights freedom, labor freedom, and investment freedom. The research by Hussain and Haque (2016) for 186 countries over the period 2013–2015 revealed that trade freedom, financial freedom, business freedom, labor freedom, and fiscal freedom all have a positive impact on economic growth.

The relationship between economic freedom and economic growth still deserves much of interest. Our study focuses on this relationship in developing countries. We seek to answer two main questions of whether economic freedom is a growth stimulus factor and how each dimension of economic freedom affects economic growth in developing countries. Answering to the second question is more of interest, for it would suggest appropriate policies that governments in developing countries can take in order to foster economic growth.

2 Methodology

The theoretical framework of the study is set in the context of Solow growth model. The economy's production function takes the Cobb-Douglas form where the total output depends on stocks of physical capital and labor:

$$Y_t = e^{\theta EF_t} K_t^{\alpha} L_t^{\beta} \tag{3.1}$$

where Y is the total output, K is stock of physical capital, and L is labor. α and β are the factor intensity. The degree of economic freedom EF is incorporated into the production function as a size effect. The sign of θ reveals the relation between economic freedom and total output. When θ takes a positive (negative) value, economic freedom shows a positive (negative) effect on total output. In the case of θ equal to zero, economic freedom has no effect on total output.

Taking the natural logarithm on both sides of the production function, we can derive the growth equation as follows:

$$LnY_t = \alpha LnK_t + \beta LnL_t + \theta EF_t \tag{3.2}$$

The equation shows how growth in total output is determined by growth in stocks of physical capital and labor and the change in the degree of economic freedom. In particular, 1% increase in the stock of physical capital and 1% increase in the stock of labor result in α% and β% increase in total output, respectively. Besides, 1 unit change in the degree of economic freedom results in θ% change in total output.

The empirical study is conducted with 65 developing countries worldwide in the period from 1995 to 2014 to investigate the impact of economic freedom on economic growth. The Index of Economic Freedom published by the Heritage Foundation is used to measure economic freedom. The study aims to examine the growth effect of economic freedom at both overall and individual component levels. Due to the availability of data, 9 out of 12 dimensions of economic freedom index are considered including property rights (PRR), government integrity (GIN), tax burden (TAB), government spending (GSP), business freedom (BUF), monetary freedom (MOF), trade freedom (TRF), investment freedom (INF), and financial freedom (FIF). The regression equations for the two models are written as:

Model 1

$$LNGDP_{i,t} = c + \beta_1 LNK_{i,t} + \beta_2 LNL_{i,t} + \beta_3 EFI_{i,t} + e_{i,t} \tag{3.3}$$

Model 2

$$LNGDP_{i,t} = c + \beta_1 LNK_{i,t} + \beta_2 LNL_{i,t} + \beta_3 PRR_{i,t} + \beta_4 SGIN_{i,t} + \beta_5 TAB_{i,t} + \beta_4 GSP_{i,t} + \beta_5 BUF_{i,t} + \beta_6 MOF_{i,t} + \beta_7 TRF_{i,t} + \beta_8 INF_{i,t} + \beta_9 FIF_{i,t} + e_{i,t} \tag{3.4}$$

where subscript i denotes country and t denotes time in year.

The independent variable *LNGDP* is natural logarithm of GDP. For the explanatory variables, *LNK* is natural logarithm of stock of physical capital, *LNL* is natural logarithm of stock of labor, and *EFI* is economic freedom index. Model 1 studies the effect of overall economic freedom on economic growth, whereas Model 2 investigates the growth effect of each dimension of economic freedom.

Data for GDP, physical capital stock, and stock of labor are taken from the Penn World Table (Feenstra et al., 2015). To adjust for the effect of inflation, GDP and physical capital stock are measured at a constant price level (in 2011 USD). The stock of labor is measured by the number of employed people. Data for EFI and its nine sub-indices are taken from the Index of Economic Freedom published by the Heritage Foundation. The EFI has scores ranging from 0 to 100 with a higher score indicating a higher degree of economic freedom. Similarly, the score for each sub-index ranges from 0 to 100. The raise in the score value for each sub-index means the increase in economic freedom that it nominates.

Data for all countries is collected in the same period of time that provides a strongly balanced panel data. Panel data analysis requires controlling for time invariant and unobserved factors affecting the independent variables. Since each country is specific on its own, then the unobserved factors are referred to as country heterogeneity. Regression analysis on panel data is conducted with Stata statistical software program. Various diagnostic tests are conducted which show there are problems of cross-sectional dependence, serial correlations, and heteroskedasticity. With the presence of these problems in data, Torres-Reyna (2007) suggests to use the generalized least square method.

3 Results

The regression results are presented in Table 3.1.

Table 3.1 Impact of economic freedom on economic growth in developing countries. Dependent variable: *LNGDP, natural logarithm of GDP*

	Model 1		Model 2	
Explanatory variables	Coefficient	P-value	Coefficient	P-value
LNK: Natural logarithm stock of capital	0.677	0.000	0.674	0.000
LNL: Natural logarithm stock of labor	0.318	0.000	0.315	0.000
EFI: Overall economic freedom index	0.043	0.000		0.000
PRR: Property right			−0.024	0.004
GIN: Government integrity			0.031	0.001
TAB: Tax burden			0.025	0.007
GSP: Government spending			0.017	0.010
BUF: Business freedom			0.050	0.000
MOF: Monetary freedom			0.009	0.293
TRF: Trade freedom			0.019	0.003
INF: Investment freedom			−0.024	0.001
FIF: Financial freedom			−0.011	0.120
Constant	2.199	0.000	1.855	0.000

Source: Author's own calculations (see Appendix)

As can be seen from the result table of Model 1, the overall economic freedom index has a statistically positive effect on the growth of GDP, that is, economic freedom promotes economic growth. A higher degree of economic freedom in terms of better rule of law, lower government size, more regulatory efficiency, and larger degree of market openness would result in a faster economic growth. In order to gain a better understanding of how economic freedom affects economic growth, Model 2 reveals the outcome. At the dimensional level, seven out of nine sub-indices of economic freedom show statistical effects on economic growth, of which five have positive and two have negative growth effects.

Among the growth stimulus factor, business freedom has the strongest impact. Business freedom reflects the extent to which the regulatory and infrastructure environments constrain the efficient operation of businesses. Many regulations hinder business productivity and profitability and likely distort competition. Burdensome and redundant regulations are the most common barriers to the free conduct of entrepreneurial activity. Increase in business freedom by reducing burdensome barriers to conducting business including regulatory red tape and high transaction costs will decrease the cost of production to business firms that leads to an increase in aggregate supply and finally a higher total output.

Government integrity has the second largest positive effect on economic growth. Corruption erodes economic freedom by introducing insecurity and coercion into economic relations. Systemic corruption of government institutions and decision-making is found with various practices such as bribery, extortion, nepotism, cronyism, patronage, embezzlement, and graft. Improvement in government integrity with more transparency in government policymaking and governmental and civil service would increase public trust and economic vitality by reducing the transaction costs of economic activity and promoting fair competition. Higher government integrity encourages economic activity and fosters economic growth.

Next is the growth effect of tax burden. In the Index of Economic Freedom, a higher score for tax burden sub-index means less tax burden imposed on economic activity. With a positive coefficient for tax burden variable, this suggests the lower the tax burden, the higher the economic growth. Government taxes are imposed at individuals as well as business firms. Lower tax burden increases the reward for individuals and businesses for their economic activity. For individuals, lower income tax results in a higher personal income after tax that provides more incentive to undertake work. Besides, higher income after tax induces people to consume more that stimulates aggregate demand and thus higher total output produced. At the business firms, lower tax rates raise returns to business operation and increase firms' incentives to pursue their goals in the marketplace and therefore increase the level of overall private-sector activity.

The fourth is trade freedom. In many countries, governments place restrictions on trade in the various forms of tariffs, export taxes, trade quotas, and outright trade bans or in the form of regulatory barriers related to health or safety. Trade freedom allows the free flow of foreign commerce and direct production incentives for local producers to the goods in which they have a comparative advantage and enjoy the benefit of economies of scale from mass production. Trade freedom also put

advanced technology products and services to the reach of local entrepreneurs and expands their own productive development. This raises overall economic efficiency and economic growth.

Finally, the size of government spending affects economic growth in different channels. In a positive channel, government spending provides infrastructure, fund research for technology improvement, or human capital investment which increases productivity and thus faster economic growth. In a negative channel, excessive government spending crowds out private economic activity. Government spending which is financed by taxes and borrowing will distort the market allocation of resources and decrease private investment incentives. Even worse, the growth of public sector may lead to bureaucracy, lower productivity, inefficiency, and mounting public debt that hinders economic growth. The effect of government spending on economic growth depends very much on which channel will dominate the other. In the Index of Economic Freedom, a higher score for government spending sub-index means a lower size of government spending. A positive coefficient for government spending variable reveals that lower size of government spending leads to higher economic growth. When the burden of government spending is less, private sector has more chance to develop as more economic resources are allocated to this sector, and since private sector is more efficient than public sector, this would contribute positively to economic growth.

The two economic freedom sub-indices including investment freedom and property rights are found to have negative effects on economic growth. Firstly, a higher degree of investment freedom impedes economic growth. This is not a surprise finding. Investment freedom measures the free flows of capital across the borders, both inflows of international capital and outflows of domestic capital in the search for higher rates of return. In the developing countries, economic growth relies very much on capital accumulation. As shown in the result table, 1 percent increase in capital stock leads to 0.67 percent increase in GDP, more than double compared to that of labor of 0.31. In many countries, governments while encouraging the inflows of foreign capital often place restrictions on the movement of domestic capital to limit the outflows of capital. Therefore, a lower degree of investment freedom in terms of higher restrictions on capital outflows can increase the stock of domestic capital in the countries and help to increase economic growth.

Property rights unexpectedly show a negative growth effect. Property rights refer to the extent to which a country's legal framework allows individuals to acquire, hold, and utilize private property, secured by clear laws that can be enforced effectively. Secure property rights give citizens the confidence to undertake economic activity and make long-term plans because they know that their properties are safe from unfair expropriation or theft. One possible explanation for the negative growth effect of property rights in the developing countries would be that in many developing countries, private property rights, especially intellectual property rights, are often violated. Lack of or inadequate legal framework to protect intellectual property rights for foreign technology or new ideas would facilitate local businesses to expropriate advanced technology or new ideas that help to increase the production of goods and thus higher economic growth.

4 Conclusions

Achievement of high and sustainable economic growth is considered a major objective for developing countries to increase their people's living standards and in the hope to close the income gap with developed countries. The empirical study on growth effect of economic freedom for 65 developing countries worldwide in the 1995–2014 period provides a robust evidence to support the idea that economic freedom indeed plays an important role in stimulating economic growth. Several policy implications can be withdrawn from the study's finding. Developing countries would experience higher economic growth if governments are ready to improve the level of economic freedom. To do it, government should facilitate the development of private sector which seems to be more effective than public sector by creating a conducive business environment. Efforts are needed to lessen excessive business regulations, reduce burdensome barriers to conducting business, and raise the degree of market friendliness for investors. Government should improve government integrity as it helps to raise transparency, lower transaction costs of economic activity, increase public trust and confidence, and promote fair competition. Besides, there is the need to lessen tax burden on business firms and provide more room for private sector to grow via reducing the size of government spending. For this, government should be ready to narrow its share in the nation's economic activity. Encouraging the inflow of foreign investment together with restrictions in the outflow of capital seems to be an effective policy as developing countries rely very much on capital contribution to economic growth. Finally, while property rights show to have a negative effect on economic growth, government in developing countries must still pay attention to improve property rights because in the long run, economic growth cannot be sustainable if property rights are seriously violated.

Appendix

Model 1

```
Cross-sectional time-series FGLS regression

Coefficients:  generalized least squares
Panels:        homoskedastic
Correlation:   no autocorrelation

Estimated covariances      =         1          Number of obs      =      1263
Estimated autocorrelations =         0          Number of groups   =        65
Estimated coefficients     =         4          Obs per group: min =        16
                                                               avg =  19.43077
                                                               max =        20
                                                Wald chi2(3)       =  38718.47
                                                Prob > chi2        =    0.0000
```

lngdp	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lnk	.6774394	.0119651	56.62	0.000	.6539882	.7008905
lnl	.3188659	.0118577	26.89	0.000	.2956252	.3421066
efi	.0432437	.0113521	3.81	0.000	.020994	.0654934
_cons	2.199405	.1182935	18.59	0.000	1.967554	2.431256

Model 2

```
Cross-sectional time-series FGLS regression

Coefficients:  generalized least squares
Panels:        homoskedastic
Correlation:   no autocorrelation

Estimated covariances      =         1          Number of obs      =      1225
Estimated autocorrelations =         0          Number of groups   =        65
Estimated coefficients     =        12          Obs per group: min =        12
                                                              avg =  18.84615
                                                              max =        20
                                                Wald chi2(11)      =  41041.83
                                                Prob > chi2        =    0.0000
```

lngdp	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lnk	.6742133	.0127111	53.04	0.000	.6493	.6991266
lnl	.3156273	.0131435	24.01	0.000	.2898665	.3413882
prr	-.0239522	.0082739	-2.89	0.004	-.0401688	-.0077357
goi	.0312328	.0096825	3.23	0.001	.0122555	.0502102
tab	.0247616	.0092481	2.68	0.007	.0066357	.0428875
gsp	.0169165	.006555	2.58	0.010	.0040689	.029764
buf	.0501158	.0093357	5.37	0.000	.0318182	.0684134
mof	.0098186	.0093347	1.05	0.293	-.008477	.0281143
trf	.0191851	.0064908	2.96	0.003	.0064634	.0319069
inf	-.024131	.0070603	-3.42	0.001	-.0379689	-.0102931
fif	-.0114806	.0073906	-1.55	0.120	-.025966	.0030048
_cons	1.85563	.1440753	12.88	0.000	1.573247	2.138012

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Chapter 4
The Effect of Government Size on Economic Growth and Technical Change

Cuong Tat Do, Anh Ngoc Thi Ngo, and Dinh Van Nguyen

Abstract This paper examines the effects of government size on economic growth and technological change at country level using Penn World Table version 9.0 with a focus on Asian nations. Government size is measured by the share of government expenditure to gross domestic product, and technological change is measured by total factor productivity at national level. Using endogenous growth theory as major theoretical framework and employing country mixed-effect regression models, we find that the effects of government size on economic growth and technological change are complex and nonlinear. Indeed, the causal relationship between government size and both economic growth and technological change shows a multiple equilibrium function. As a consequence, variation of government size yields an unpredicted variation of economic growth and technological change. It implies that once policy makers decide a change in the size of government, they should be aware that the effects of the change on economic growth and technological change might not be as their expectations.

Keywords Government size · Economic growth · Technological change · Asian nations

1 Introduction

The role of government in the process of economic growth and technological progress is a long debate in the field of economics and political science. The debate focuses to answer the question whether large size of government implies faster rate

C. T. Do (✉) · A. N. T. Ngo
Institute of Economics, Ho Chi Minh National Academy of Politics, Ho Chi Minh City, Vietnam
e-mail: cuongdt@hcma.vn

D. Van Nguyen
VNU International School, Vietnam National University, Hanoi, Vietnam

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of economic growth and whether large size of government will affect technological change in an economy. Yet, economic theory is far from clear-cut in its predictions, the fundamental argument that the need for government interventions to mitigate market failures might have observable and unobservable effects on the stagnation of technological progress in specific circumstances. This idea has led to an expansion of government size in many developing countries. Similarly, the basic hypothesis that government size greases the wheels of economic growth and technological progress has led to international organization such as the World Bank and International Monetary Fund to propose a highlight on the importance of downsizing of government expenditure to keep pace of economic growth and technological progress to their member countries.

The paper supplies new and robust empirical evidence into these issues and contributes to contemporary literature in several dimensions. First, instead of emphasizing on the direct effects, this paper shows nonlinearity and heterogeneity in the effect of government size on economic growth. Precisely, it investigates a threshold such that existing government size will change its effect to economic growth. The main novelty of the study is to employ a full polynomial function to analyze the effect of government size on economic growth. Second, the paper assesses whether the government size affects economic growth through its effect on total factor productivity (TFP). The question is very important because TFP growth has been shown to be the main driver of economic performance (Easterly and Levine (2002); Parente and Prescott (2002); Caselli (2005); Gómez-Sancho et al. (2013); Kim et al. (2018)), which is a standard economic growth accounting dated back to Solow's first effort. Third, the paper analyzes the effect of government size on technological progress. Technological progress has been shown as a change of capital-labor ratio which might be affected by government intervention, measured by general government expenditure, on the labor and capital market.

2 A Brief Literature Review

Government can affect economic growth by its size and quality. The effects of size and quality of government are the two distinctive branches of economic literature. This paper focuses on the effect of government size rather than both effects. Studies on the effect of government size to economic growth emphasize the importance of the state's absorption of society's resources through its expenditure and taxation. These studies find that a larger government expenditure is growth-impeding (e.g., Barro (1991); Fölster and Henrekson (2001); Sala-i-Martin et al. (2004); Ghosh and Gregoriou (2008); Bergh and Karlsson (2010); Kim et al. (2018)). They also point out the negative effect of the expansion of the government size in fostering the rent-seeking behavior at the costs of economically productive activities. On the other hand, several studies find the opposite results (e.g., Barro (1990); Grossman (1990); Barro and Sala-i-Martin (1992); Hansson and Henrekson (1994); Turnovsky and

Fisher (1995); Kneller et al. (1999)) and contribute the positive effect to the existence of market failure and negative externalities.

The inconclusive findings could raise the question of the existence of a threshold where government size might switch its effect on economic growth. Barro (1990), Karras (1996), Asimakopoulos and Karavias (2016), and Kim et al. (2018) show that the effect of government size on economic growth does have a threshold. Once the size of government passes a particular threshold, the effect of government size on economic growth will change from positive to negative vice versa. They also point out that the relationship between government size and economic growth is nonlinear with thresholds rather than linear.

The above effect of government size on economic growth is some time called direct effect, and the other effect is indirect effect. The major force behind economic growth is technological progress. The different levels of technological progress between countries explain the different growth rates worldwide. Government size channels its effect on economic growth through technological progress via two ways: (1) incentivize innovation in firms and government bodies (Caselli (1999); Galor and Moav (2000); Aghion et al. (2002)) and (2) provide stable environment for economic growth through optimal spending programs (Cozzi & Impullitti, 2010).

3 Model

It is assumed that all nations have the same form of production function following the standard proposed by Aghion and Howitt (1998). In all economies, every firm and household has the same technology. Therefore, the basic production function of these economies is assumed:

$$Y_{i,t} = Af(K_{i,t}, L_{i,t}) = A_{i,t}K_{i,t}^{\alpha}L_{i,t}^{\beta} \tag{4.1}$$

where $Y_{i,\,t}$ is the national income of country i in the time t, $K_{i,\,t}$ is the national capital of country i in the time t, $L_{i,\,t}$ is the national labor of country i in the time t, and $A_{i,\,t}$ is a measure current level of technology for a country called total factor productivity of country i in the time t; α, β are marginal elasticity of capital and labor to national income, respectively.

Allowing for a change in technology level, we have the following equation:

$$\frac{\Delta Y_{i,t}}{Y_{i,t}} = \alpha\frac{\Delta K_{i,t}}{K_{i,t}} + \beta\frac{\Delta L_{i,t}}{L_{i,t}} + \frac{\Delta A_{i,t}}{A_{i,t}} \tag{4.2}$$

$$\begin{aligned}\text{Growth in Output} = {} & \text{Contribution of Capital} + \text{Contribution of Labor} \\ & + \text{Growth in Total Factor Productivity}\end{aligned}$$

The above equations are very important because it allows us to measure three sources of economic growth: (1) changes in amount of capital, (2) changes in the amount of labor, and (3) changes in total factor productivity.

Because changes in total factor productivity cannot be observed directly, it is measured indirectly. We have data on growth of national income, capital, and labor. From these data and growth equation, we can compute the growth of total factor productivity as follows:

$$\frac{\Delta A_{i,t}}{A_{i,t}} = \frac{\Delta Y_{i,t}}{Y_{i,t}} - \alpha \frac{\Delta K_{i,t}}{K_{i,t}} - \beta \frac{\Delta L_{i,t}}{L_{i,t}} \tag{4.3}$$

$\Delta A_{i,\,t}/A_{i,\,t}$ is the change in output that cannot be explained by the change of inputs. Thus, the growth in total factor productivity is estimated as a residual. This residual is the remaining of output after we have accounted for the determinant of growth that we can measure. Indeed, $\Delta A_{i,\,t}/A_{i,\,t}$ is also called technological progress, or sometimes called Solow's residual.

Total factor productivity can change for several reasons. The most notable reason is the change of knowledge accumulation. The other reasons might be education and government regulation or government size that can affect the change of technological progress as well. If government regulations require firms to consume capital to reduce environmental pollution or increase the work safety for workers, then the amount of capital might increase in output, and it implies a decrease in technological progress.

If we divide both sides of Eq. (4.1) by L and assume that $\alpha + \beta = q$, where $q \in \{q < 1; q > 1; q = 1\}$, we have the following equation:

$$\frac{Y_{i,t}}{L_{i,t}^{q-\beta}} = \vartheta \frac{Y_{i,t}}{L_{i,t}} = A_{i,t} \left(\frac{K_{i,t}}{L_{i,t}} \right)^{\alpha} \tag{4.4}$$

$$\frac{Y_{i,t}}{L_{i,t}} = \frac{1}{\vartheta} A_{i,t} \left(\frac{K_{i,t}}{L_{i,t}} \right)^{\alpha} \tag{4.5}$$

Applying approximation method, we have the following expression:

$$\frac{\Delta y_{i,t}}{y_{i,t}} = \frac{1}{\vartheta} \frac{\Delta A_{i,t}}{A_{i,t}} + \alpha \frac{\Delta k_{i,t}}{k_{i,t}}, \tag{4.6}$$

with $y_{i,\,t} = Y_{i,\,t}/L_{i,\,t}$ and $k_{i,\,t} = K_{i,\,t}/L_{i,\,t}$

The interest of this paper is analyzing the relationship between government size and economic growth and technological progress. It is assumed that the changes in the size of government require government to purchase more goods and services from markets; then it will likely boost the growth rate of economics. On the other hand, the expenditure of government might result in a change in demand of

accumulating more scientific knowledge to serve the further increasing or expansion of economies.

From (4.1), the following equation is introduced:

$$Y_{i,t} = Af(K_{i,t}, L_{i,t}, G_{i,t}) = A_{i,t}K_{i,t}^{\alpha}L_{i,t}^{\beta}G_{i,t}^{\gamma} \tag{4.7}$$

Equation (4.7) different to (4.1) is on the term government size, measured by G. Government expenditure is an element of aggregate demand, so increase in government expenditure will likely increase the aggregate demand if all the other variables are held constantly. Practically, raising government expenditure not always leads to the increase in aggregate demand. Therefore, in Eq. (4.8) government size is treated as exogenous variable. The exogenous variable might have several thresholds where it switches its effect on economic growth and technological progress. It implies that in empirical model, we should consider utilizing the two-stage regression models.

Applying rules of transformation from Eqs. (4.1) to (4.6) on Eq. (4.7), we have a system of the following equations:

$$\frac{\Delta Y_{i,t}}{Y_{i,t}} = \alpha\frac{\Delta K_{i,t}}{K_{i,t}} + \beta\frac{\Delta L_{i,t}}{L_{i,t}} + \gamma\frac{\Delta G_{i,t}}{G_{i,t}} + \frac{\Delta A_{i,t}}{A_{i,t}} \tag{4.8}$$

$$\frac{\Delta A_{i,t}}{A_{i,t}} = \frac{\Delta Y_{i,t}}{Y_{i,t}} - \alpha\frac{\Delta K_{i,t}}{K_{i,t}} - \beta\frac{\Delta L_{i,t}}{L_{i,t}} - \gamma\frac{\Delta G_{i,t}}{G_{i,t}} \tag{4.9}$$

$$\frac{\Delta y_{i,t}}{y_{i,t}} = \frac{1}{\vartheta}\frac{\Delta A_{i,t}}{A_{i,t}} + \alpha\frac{\Delta k_{i,t}}{k_{i,t}} + \gamma\frac{\Delta G_{i,t}}{G_{i,t}} \tag{4.10}$$

The appearance of government size in Eqs. (4.8) and (4.9) allows us to have the measurement of technical change without the effect of government size. Through comparing the term $\Delta A_{i,\,t}/A_{i,\,t}$ Eqs. (4.3) and (4.9), we can extract the effect of government size on technical change within countries and by the time. The change in value $\Delta A_{i,\,t}/A_{i,\,t}$ between the two equations might expose the role of government size. Additionally, it also might reveal the switch effect of government size on technical change in different thresholds.

Equation (4.10) allows us to measure the effect of both technical change and government size on the growth of labor productivity. The difference of technical change variable in Eq. (4.10) to Eq. (4.9) is that the effect of government size on technical change is taken out. Therefore, technical change and government size variables in Eq. (4.10) should not be correlated with each other.

4 Research Method and Data

4.1 Research Method

To examine the relationship of government size with economic growth and technical change, we estimate the following equations based on the light of Eqs. (4.3) and (4.8) to (4.10):

$$\frac{\Delta y_{i,t}}{y_{i,t}} = \alpha_i + \beta_i \frac{\Delta k_{i,t}}{k_{i,t}} + \gamma_i f(G_{i,t}) + \varepsilon_{i,t} \tag{4.11}$$

and

$$\frac{\Delta A_{i,t}}{A_{i,t}} = \theta_i + \delta_i f(G_{i,t}) + \epsilon_{i,t} \tag{4.12}$$

and

$$f(G_{i,t}) = \omega_0 + \omega_1 \frac{\Delta G_{i,t}}{G_{i,t}} + \omega_2 \left(\frac{\Delta G_{i,t}}{G_{i,t}}\right)^2 + \omega_3 \left(\frac{\Delta G_{i,t}}{G_{i,t}}\right)^3 \tag{4.13}$$

where $i = 1, 2, \ldots, N$ and $t = 1, 2, \ldots, T$. α_i and θ_i are included to control for country-specific omitted factors that are stable relatively over time. Larger countries tend to have larger government expenditure due to the need to satisfy demand of their citizens. On the other hand, smaller countries tend to have smaller government expenditure and tend to have higher probability to borrow money from sponsors to smooth their government expenditure (Kim et al. 2018).

Equations (4.11) and (4.12) assume that there is a complex and short-run relationship between government size and economic growth and technical change. Necessary conditions to hold this assumption are that individual time series for $\Delta y_{i,t}/y_{i,t}$, $\Delta A_{i,t}/A_{i,t}$, and$\Delta G_{i,t}/G_{i,t}$ are stationary and integrated of the same order and that$\Delta y_{i,t}/y_{i,t}$, $\Delta A_{i,t}/A_{i,t}$, and$\Delta G_{i,t}/G_{i,t}$ form a cointegrated system.

In the presence of cointegration, the effect of government size to economic growth and technical change can be estimated by applying the group-mean dynamic OLS and fully modified OLS estimators suggested by Pedroni (2001). Both estimators allow for a greater flexibility in the occurrence of heterogeneous cointegrating vectors. As suggested in Kim et al. (2018), these estimators are robust to the omission of variables that are not parts of cointegrating relationship. Moreover, they can be shown as the expectation value of cointegrating vectors.

However, when all individual time series are stationary and cointegrated, we should not utilize fully modified OLS as suggested in Kim et al. (2018). In this case, we will apply mixed-effect regression models to address fixed and random effects of

independent variables on dependent variable. Therefore, the three above equations will be transformed to the following equations for estimating purposes:

$$\frac{\Delta y_{i,t}}{y_{i,t}} = \alpha_i + \beta_i \frac{\Delta k_{i,t}}{k_{i,t}} + \gamma_i f(G_{i,t}) + GSE_{i,t} + \varepsilon_{i,t} \tag{4.14}$$

$$\frac{\Delta A_{i,t}}{A_{i,t}} = \theta_i + \delta_i f(G_{i,t}) + GSE_{i,t} + \epsilon_{i,t} \tag{4.15}$$

In Eqs. (4.14) and (4.15), the new variable is "government size effect," while the estimated coefficients are fixed effects. Fixed effects are stable within group of countries sharing similarities of geographical and climatic conditions or cultural traditions, while random effects are the variation among countries with regard to time, countries, and regions. We can observe fixed effects, while we cannot observe random effects.

4.2 Data

To investigate the relationship of government size with economic growth and technical change, we consider a panel data of 183 developed and developing countries which cover period of 1970 to 2014. Government size is measured as growth of the share of government expenditure to GDP (following Fölster and Henrekson (2001), Bergh and Karlsson (2010)) and growth rate of government expenditure. Penn World Table version 9.0 (hereafter PWT9) provides useful source of data on government expenditure as share of GDP; based on this information, we can calculate the absolute value of government expenditure. Growth rate of GDP is also estimated based on data taken from the PWT9.

In this paper, economic growth is measured as growth of labor productivity, and technical change is measured as growth of total factor productivity. Total factor productivity is estimated through Eq. (4.3), while labor productivity is measured as GDP per worker (Table 4.1).

In the following figures, we show the relationship of government size with economic growth and technical change in the three large continents. The pattern of the relationship between government size and technical change is similar among three continents (Fig. 4.2), while the relationship between government size and economic growth in Asian and Latin American nations is different to European nations.

It also implies that the pattern of relationship between government size and technical change is consistent, while the pattern of the relationship between government size and economic growth is not consistent through these nations. Additionally, different effect of government size to economic growth reflects the fact that quality of governments on spending their money might affect the performance of economic growth.

Table 4.1 Descriptive statistics

	Growth of GDP per labor	Growth of capital per labor	Growth of government size
Panel A: Summary statistics			
Mean	0.0187	0.022	0.026
Standard deviation	0.068	0.045	0.301
Min	−0.672	−0.392	−17.842
Max	1.986	0.813	0.964
Observations	8060	8060	9253
Panel B: Panel unit root test and cointegrated test			
Panel unit root test	Reject H_0	Reject H_0	Reject H_0
Cointegrated test	Westerlund test: Reject H_0		
Observations: *N*T*	8053	8053	8053

Source: Authors' estimation

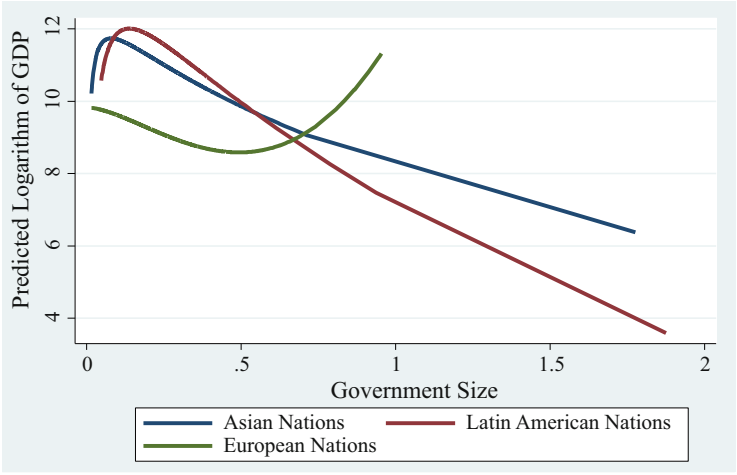

Fig. 4.1 Relationship between government size and growth of GDP. Source: Authors' estimation

The mixed-pattern effect of government size on economic growth and technical change in Figs. 4.1 and 4.2 reminds us that there should be a nonlinear relationship of government size to economic growth and technical change. The mixed pattern requires a more complex data analysis technique rather than a simple data analysis framework.

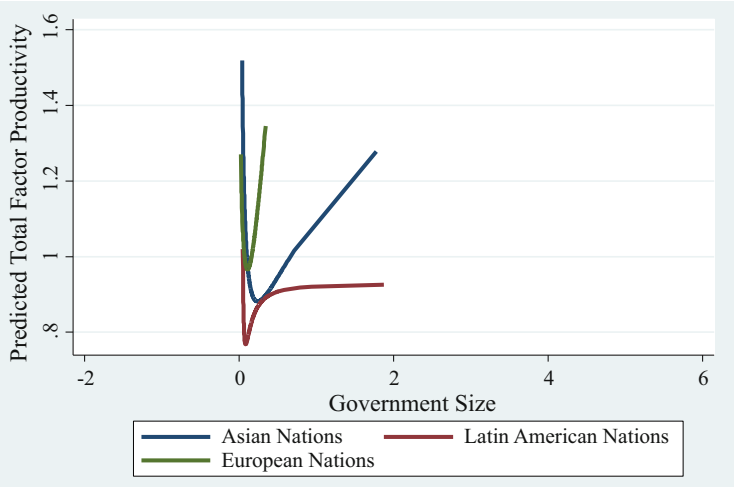

Fig. 4.2 Relationship between government size and total factor productivity. Source: Authors' estimation

5 Empirical Results

As can be seen from Tables 4.2, 4.3, 4.4, and 4.5, there are three models with different group of independent variables. Model 1 consists of our interested variable, while in the other two models, we add more control variables to control some national characteristics. In model 2, we utilize two variables related to human education and health, whereas in model 3 we add four variables including two variables related to human education and health and the other two proxied for economic status: openness and dependent. Openness measures the ratio of export and import to GDP in each country, while dependent variable measures the ratio of active workers to the rest of population.

In this section, we will present two stories of empirical results based on two different sets of proxied variables measuring government size. The first story is about absolute value and the other story is on the side of relative values.

5.1 A Story of Absolute Value

From Table 4.2, the effect of growth of capital per worker to economic growth is large and statistically significant at 1%. With the appearance of government, the increasing ratio of capital to labor by 1% will likely increase 0.632% economic growth. The value of this variable is quite consistent in the three models; it varies from 0.604 to 0.632. It implies that our selection of functional form is quite

Table 4.2 The effect of government size on economic growth

	Model 1	Model 2	Model 3
Dependent variable: Growth of GDP per worker			
Growth of capital per worker	0.632*** (0.015)	0.605*** (0.017)	0.604*** (0.017)
Government size	0.097*** (0.005)	0.121*** (0.006)	0.124*** (0.006)
(government size)^2	0.018*** (0.002)	0.086*** (0.011)	0.091*** (0.011)
(government size)^3	0.001*** (0.000)	0.014*** (0.004)	0.015*** (0.004)
Human capital		0.003 (0.002)	0.004** (0.002)
Expectation of life expectancy		−0.0002** (0.0001)	−0.0002** (0.000)
Openness			0.008*** (0.002)
Dependent			0.002** (0.001)
Constant	0.002 (0.001)	0.013** (0.005)	0.007 (0.006)
Observations	8026	7022	7022

Note: Standard errors are in parentheses; *, **, and ***, statistical significance at 10%, 5%, and 1%, respectively
Source: Authors' estimation

consistent with the other empirical studies utilizing endogenous growth theory as major theoretical framework.

The effect of growth of government size (measuring directly from absolute value of government expenditure) on economic growth is quite consistent through three models as well as growth of capital per active worker. All estimated coefficients of government size are statistically significant at 1%. It implies that these empirical results should be considered. The effect of linear term of government size is changed from 0.097 to 0.124 when we add more control variables. The change of quadratic term of government size varied from 0.018 to 0.091, and the change of cubic term of government size is from 0.001 to 0.015.

Model 1 shows us that without any control variables, the effect of government size on economic growth is low, while the other models with control variables bring to us higher effect of government size on the growth of economics. The meaning of this situation is that control variables might take some more information from error terms that government size cannot take it out by itself. From empirical result of model 3, if government decides to increase its consumption by 1%, it will likely increase economic growth by approximately 0.124%. In a longer term, increase by 1% of government size will likely increase economic growth by around 0.21%. Therefore, the total effect of change in government size and ratio of capital to active

Table 4.3 The effect of government size on technical change

	Model 4	Model 5	Model 6
Dependent variable: Growth of TFP			
Growth of capital per worker	0.005 (0.015)	−0.022 (0.017)	−0.023 (0.017)
Government size	0.097*** (0.005)	0.121*** (0.006)	0.124*** (0.006)
(Government size)^2	0.018*** (0.002)	0.086*** (0.011)	0.091*** (0.011)
(Government size)^3	0.001*** (0.000)	0.016*** (0.004)	0.015*** (0.004)
Human capital		0.003 (0.002)	0.004** (0.002)
Expectation of life expectancy		−0.000 (0.000)	−0.0002** (0.0001)
Openness			0.008*** (0.002)
Dependent			0.002** (0.001)
Constant	−0.006*** (0.001)	0.006 (0.005)	0.0001 (0.006)
Observations	8026	7022	7022

Note: Standard errors are in parentheses; *, **, and ***, statistical significance at 10%, 5%, and 1%, respectively
Source: Authors' estimation

worker will be closely 1. It means that in this case, utilizing endogenous growth theory might explain the result better than neoclassical economic growth.

The change of ratio of capital to labor does not have any effect on the growth of total factor productivity as our expectation. It is true because total factor productivity is taken as a residual of growth regression model, so under the assumption that residual of regression must not have any relationship with regressors. This situation is held for all three models in Table 4.3.

Growth of government size does have effect on the technical change of the economy. All three estimated coefficients are statistically significant at 1%. The value of estimated coefficients of linear term of government size varied from 0.097 to 0.124. The value of the quadratic term of government size varied from 0.018 to 0.091, and for the cubic term of government size, the change varies from 0.001 to 0.015. The pattern of effects of government size on technical change is quite similar to those effects on economic growth. This result has not surprised us because technical change and economic growth should have same pattern and statistical distribution. Thus, the effect of the growth of government size on the growth of economics and technical change should have the same patterns.

Without any control variables, increased government size by 1% will likely lead to an increase of approximately 0.12% in the changing of technology. Under the co-effect with related human variables, the effect of government size on technical

Table 4.4 The effect of government magnitude on economic growth

	Model 7	Model 8	Model 9
Dependent variable: Growth of GDP per worker Government size is measured in changing share of government expenditure to GDP			
Growth of capital per worker	0.647*** (0.015)	0.625*** (0.017)	0.626*** (0.017)
Government size	−0.072*** (0.005)	−0.075*** (0.006)	−0.076*** (0.006)
(Government size)^2	−0.008*** (0.001)	−0.071*** (0.011)	−0.074*** (0.012)
(Government size)^3	−0.0002*** (0.0001)	−0.024*** (0.004)	−0.024*** (0.004)
Human capital		−0.0002 (0.002)	0.001 (0.002)
Expectation of life expectancy		−0.0002* (0.0001)	−0.0003** (0.0001)
Openness			−0.003 (0.002)
Dependent			0.002** (0.001)
Constant	0.005*** (0.001)	0.019*** (0.005)	0.016*** (0.006)
Observations	8026	7022	7022

Note: Standard errors are in parentheses; *, **, and ***, statistical significance at 10%, 5%, and 1%, respectively
Source: Authors' estimation

change is increased from 0.12% to almost 0.21%. In the full model, the effect increases to nearly 0.22%. The more control variables we add in the estimation model, the more information we can take from error term, and it likely helps to raise the effect of the growth of government size to technical change. This result implies that the effect of growth of government size on technical change is somehow scaled up through the interaction with control variables.

The empirical results do not tell us much information about the thresholds that the effect of government size on economic growth and technical change might be switched from positive to negative because functional form is nonlinear. Based on information about estimated coefficients of the effect of government size on economic growth and technical change in Tables 4.2 and 4.3, we demonstrate the graph of this relationship.

As can be seen from Fig. 4.3, the dash curve has only one threshold where the effect of government size on economic growth, while the solid line expresses two thresholds where the effect of government size on technical change will be switched from positive to negative and vice versa. At the beginning of analyzing period, the effect of the growth of government size on economic growth and technical change is below 0 and quite similar. Then, the pattern of these effects is diverged and showed

Table 4.5 The effect of government magnitude on technical change

	Model 10	Model 11	Model 12
Dependent variable: Growth of TFP Government size is measured in changing share of government expenditure to GDP			
Growth of capital per worker	0.019 (0.015)	−0.002 (0.017)	−0.0001 (0.017)
Government size	−0.072*** (0.005)	−0.075*** (0.006)	−0.076*** (0.006)
(government size)^2	−0.008*** (0.001)	−0.071*** (0.011)	−0.074*** (0.012)
(government size)^3	−0.0002*** (0.0001)	−0.024*** (0.004)	−0.024*** (0.004)
Human capital		−0.0002 (0.002)	0.001 (0.002)
Expectation of life expectancy		−0.0002* (0.0001)	−0.0003** (0.0001)
Openness			−0.003 (0.002)
Dependent			0.002* (0.0001)
Constant	−0.002** (0.001)	0.013** (0.005)	0.009 (0.006)
Observations	8026	7022	7022

Note: Standard errors are in parentheses; *, **, and ***, statistical significance at 10%, 5%, and 1%, respectively
Source: Authors' estimation

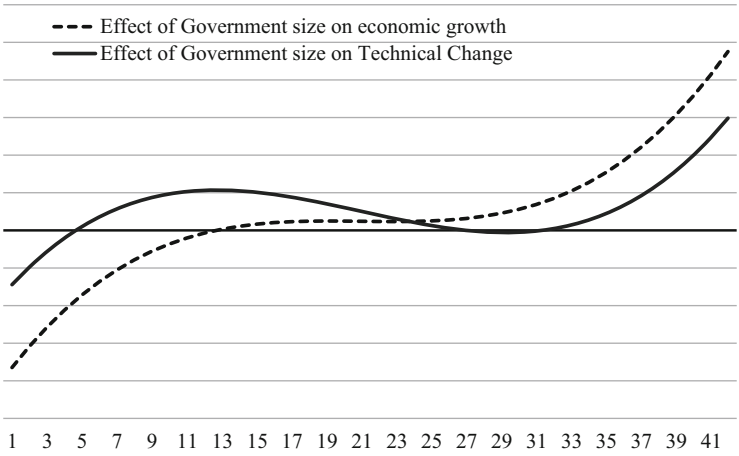

Fig. 4.3 Effect of government size on economic growth and technical change. Source: Authors' estimations

differently. Although economic growth and technical change have similar pattern, the effect of growth of government size to them is not similar.

5.2 Another Story of Relative Values

From Table 4.4, from models 7 to 9, the relationship between growth of capital per worker and growth of GDP per worker is stable and statistically significant at 1%. This relationship should be consistent with models 1, 2, and 3 because we are using the same variables. The more important thing is that under the new selection of government size variables, the effect of growth of capital per worker to growth of GDP per worker is similar. It again shows us that the functional form we select is appropriate for this analysis.

In this section, we measure government size as a change in the share of government expenditure to GDP. All estimated coefficients related to government size are negative and statistically significant at 1%. Negative effect of change in the share of government expenditure to GDP to economic growth implies that the relative size of government to its economy should be restricted. Government cannot expand their size over time. Instead, in specific periods, relative government size should be downsized, and for some period the size of government should be enlarged. The enlargement of government size in terms of expenditure might squeeze the size of the firms and the other in the economy.

The linear term of relative government size has estimated value ranging from −0.072 to −0.076. Quadratic term of relative government size has estimated value ranging from −0.008 to −0.074, and cubic term of relative government size has estimated value ranging from −0.0002 to −0.024. Therefore, if the share of government size to GDP increased by 1%, it will likely decrease economic growth by at least 0.08% with a cap approximately −0.15%.

The statistical significance of quadratic and cubic terms of government size also confirms the long-run effect of the changing size of the government when we select the other way to measure government size.

As can be seen from Table 4.5, estimated coefficient of growth of capital per worker is not statistically significant as our expectation. The effect of changing the share of government expenditure to GDP to the growth of TFP has similar pattern to the effect in economic growth equation. All estimated coefficients related to the term of government size are statistically significant at 1%.

The linear term of government size affects the growth of TFP within the range from −0.072 to −0.076. The quadratic term of government size has a ranged effect from −0.008 to −0.074, and the cubic term of government size has a ranged effect from −0.0002 to −0.024. Therefore, increasing the share of government size to GDP by 1%, it will likely decrease the growth of TFP by at least 0.08% to approximately 0.15%. Increasing the size of government in this sample will likely lead to a squeeze of technical change. Increasing government size, thus, is not always good for the economy.

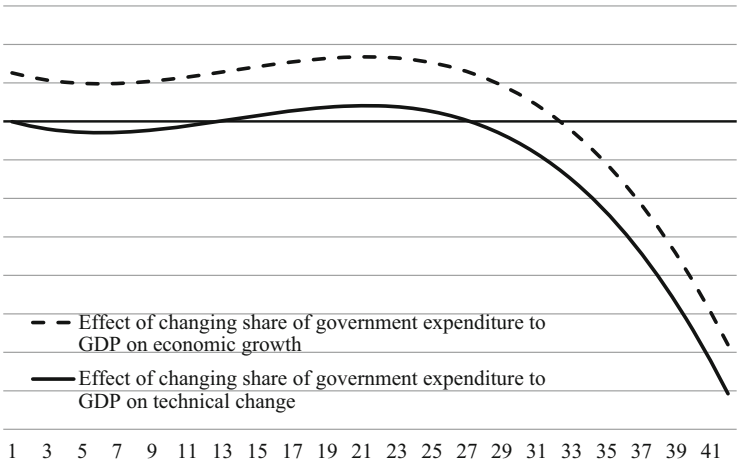

Fig. 4.4 Effect of changing share of government expenditure to GDP on economic growth and technical change. Source: Authors' estimation

As can be seen from Fig. 4.4, the shape of the two curves is quite similar. It is different to the situation in Fig. 4.3. Both curves have two thresholds. When we look at the dash curve, the two thresholds are above 0, while the solid curve has one threshold under 0 and the other is above. However, after the second threshold, the two curves show us a sharp down. It implies that for the effect of changing the share of government on economic growth, the second switch is critical. If government continuously increases its size, the largely negative effect on economic growth and technical change will likely appear. It can be understood as a punishment to government when it becomes too large to control.

5.3 Measuring the Effect of Government Size and Innovative Activities to Economic Growth

Going through all empirical evidence so far, we understand that government size will affect directly and indirectly, through technical change, the economic growth. Therefore, in this section we will analyze the effect of technical change and government size to economic growth in only one equation. To do so, we will take out the effect of government size to technical change. Then, we put the two variables into one equation to estimate their effect to economic growth. The empirical results will be presented in the following table.

Our main interest here is about the effect of government size to economic growth. All estimated coefficients related to government size are statistically significant at 1% and have negative values. The estimated coefficient of linear term of government size has a range from -0.063 to -0.059. For the quadratic term, the effect has a

Table 4.6 The effect of government size and technical change to economic growth

	Model 13	Model 14	Model 15
Dependent variable: Growth of GDP per worker			
Growth of technical change	1.069*** (0.006)	1.058*** (0.006)	1.058*** (0.006)
Government size	−0.063*** (0.002)	−0.061*** (0.003)	−0.059*** (0.003)
(government size)^2	−0.007*** (0.001)	−0.019*** (0.005)	−0.017*** (0.005)
(government size)^3	−0.0002*** (0.0000)	−0.006*** (0.002)	−0.005*** (0.002)
Human capital		−0.003*** (0.001)	−0.003*** (0.001)
Expectation of life expectancy		0.0003*** (0.00001)	0.0004*** (0.0001)
Openness			0.002** (0.001)
Dependent			−0.001** (0.0005)
Constant	0.021*** (0.002)	0.003 (0.003)	0.004 (0.004)
Observations	8026	7022	7022

Note: Standard errors are in parentheses; *, **, and ***, statistical significance at 10%, 5%, and 1%, respectively
Source: Authors' estimation

range from −0.007 to −0.017, and for cubic term, the effect has a range from −0.0002 to −0.005. Increasing government size by 1%, it will likely decrease economic growth by at least −0.07% to approximately −0.066%. When government size is measured as government expenditure rather than government investment, the increased government expenditure will likely limit the economic growth rather than to boost economic growth as government's expectation.

As can be seen from Table 4.6, the effect of growth of technical change to economic growth is large and statistically significant at 1%. If the growth of technical change increased by 1%, economic growth will likely increase by more than 1%. It implies that investment in innovative ideas or products will boost economic growth and expansion of economic frontier will be achieved.

6 Conclusion

In this paper, we try to catch the true effect of government size on economic growth and technical change in the economy. Government is the largest actor in the economy who has the strongest power and ultimate resources. Government's activities and expenditure are expected to provide stable macroeconomic conditions and

boost economic growth. However, governments sometime because of chasing their political interest might be distracted and not to fulfil their role. Therefore, instead of providing stable macroeconomic conditions and boosting economic growth, governments bring macroeconomics into an unstable status, slowing down economic growth through using too much of their resources.

The empirical results support our ideas that the effect of government size on economic growth and technical change has thresholds. Government should be aware that the effect of its expenditure might switch from positive to negative at some point. However, government never know for sure what is that point because government expenditure to economic growth has a lagged effect. Government expenditure at the period t might expose its effect at the period $t + s$.

When we take out the effect of government size on the growth of technical change and put them together in one equation to explain the source of economic growth, it is found out that growth of technical change promotes significantly economic growth, while government size is slowing down economic growth. Using the sample of 183 countries from 1970 to 2014, we are understanding that our results are concluded within the limitation of data available to us. Generalization of these results is needed to deeper analysis with detailed information on government expenditure. We do not have such detailed information, so we cannot estimate which types of government expenditure largely decrease economic growth.

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Chapter 5
Assessing Effects of FDI on Economic Growth Via Impact on Domestic Firms in Vietnam

Do Thi Thao, Phan Minh Trung, and Le Thi Minh Huong

Abstract In this paper, we will describe the selection of variables, model, and determinants of economic performance in Vietnam. The presence of FDI has created competitive pressures on domestic enterprises. This study uses panel data for Vietnamese enterprises in the industry from 2000 to 2018, which quantifies the impact of FDI on the industry leaving domestic enterprises. The results show that in addition to factors such as import and export status, industry concentration, income, age of enterprise, and number labor in enterprise, the emergence of FDI in the same industry increases the ability of domestic firms' exit.

Keywords FDI · Economic growth · Domestic firm · Impact · Vietnam

1 Introduction

FDI plays an important role in the socioeconomic development of developing countries, including Vietnam. FDI is expected to not only provide a large amount of investment and create more jobs for society but also promote export activities as well as bring about changes in technology and modern management skills for the country receiving investment. In addition to the positive results, FDI also creates certain impacts on domestic enterprises, which are overwhelming impacts on these enterprises. The presence of FDI has created competitive pressures on domestic enterprises. A research problem is raised: Does the appearance of foreign enterprises

D. T. Thao (✉)
School of Hospitality and Tourism, Hue University, Thua Thien Hue, Vietnam

P. M. Trung
School of Hospitality and Tourism, Hue University, Thua Thien Hue, Vietnam

School of Economics, Huazhong University of Science and Technology, Wuhan, China

L. T. M. Huong
School of Economics, Huazhong University of Science and Technology, Wuhan, China

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overwhelm Vietnamese enterprises out of the market? According to economic expert Pham Chi Lan, after Vietnam joined WTO, foreign investment increased very strongly, and the proportion of foreign investment in GDP and in industry and export increased continuously, while this proportion of domestic enterprises decreased. The reality is that Vietnamese enterprises are very tired and the market share of FDI enterprises is increasing. Therefore, this study aims at a systematic study of the crowding out of foreign enterprises for the case of Vietnam. Based on the set of enterprise survey data of the GSO of Vietnam from 2000 to 2018, this study applies a quantitative model to quantify the impact of FDI on the industry's departure domestic industry operating in industry.

Research by Blomström et al. (1992) shows that FDI has an impact on developing countries to high growth. They suggested the country should gain some income to gain more from FDI.

Agarwal (2000) analyzed the impact of foreign direct investment on GDP growth in South Asia by collecting data from South Asian countries, including India, Pakistan, Bangladesh, Sri Lanka, and Nepal. The results show that there is a synergy effect between FDI and national investment. The study results showed that the negative impact of FDI inflows to GDP growth before 1980, but after 1980 the opposite effect. Alfaro (2003) explored the relationship between FDI and economic growth. By conducting empirical analysis using transnational data for 47 developing countries, the study concludes that the benefits of FDI change the way FDI makes a significant positive contribution to regional growth and production, while having a significant negative impact on the primary industry. FDI in the service sector shows a positive but not significant impact on growth. De Mello (1997) studied FDI and economic growth in 32 countries (17 OECD countries and 15 non-OECD countries) between 1970 and 1990 using time series and table data. The study showed that FDI has had a positive impact on economic growth in 17 OECD countries, and no impact was found in the remaining 15 countries. Hsiao (2006) study of eight Asian countries shows that FDI has a direct one-way effect on GDP and indirectly through exports. Karikari (1992) used the Var model to examine the relationship between FDI and economic growth in Ghana from 1961 to 1988, indicating that FDI did not affect economic growth while reducing economic growth. In light of the FDI inflows, Karikati explained that this result may be due to the insignificant volume of FDI in time data and the impact of FDI on free trade rather than promoting the economic growth of the country. Carkovic and Levine (2005) argued the impact of FDI on economic growth, using data from 72 developed and developing countries. First, the author uses pre-cut data by calculating the data for each country for a full time period and then converting the data by an average of about 5 years to extract the variable duration. The results show that FDI has not had a positive impact on economic growth. De Mello (1997) investigated the impact of FDI on output growth in developed countries. The author concludes that the final impact of FDI on growth depends on the extent to which it is spread to domestic firms where FDI leads to increased profits in domestic production. Akinlo (2004) studied the effects of FDI on economic growth in Nigeria in the period 1970–2001. The final conclusion is that FDI has a positive impact on economic growth after a period of economic downturn.

The results show that FDI in the mining sector does not grow as much as in the manufacturing sector. At the same time, the author also suggested that the government should provide environmentally appropriate information to attract FDI in the manufacturing sector. Based on the theory of endogenous growth, the eclectic theory of domestic and foreign researchers applied the analysis of the relationship between economic growth and FDI. For example, De Mello (1997) studied FDI and economic growth in 32 countries (17 OECD countries and 15 non-OECD countries) between 1970 and 1990 using table data and time series data. The study showed that FDI has had a positive impact on economic growth in 17 OECD countries, and no impact was found in the remaining 15 countries. Hsiao (2006) study of eight Asian countries shows that FDI has a direct one-way effect on GDP and indirectly through exports. Karikari (1992) used the Var model to examine the relationship between FDI and economic growth in Ghana from 1961 to 1988, indicating that FDI did not affect economic growth while reducing economic growth. In light of the FDI inflows, Karikati explained that this result may be due to the insignificant volume of FDI in time data and the impact of FDI on free trade rather than promoting the economic growth of the country. Yousaf et al. (2008) studied the economic impact of FDI in Pakistan. They studied the effects of FDI on exports and imports of Pakistan from years 1973 to 2002. The study also concluded that FDI has negative impact on exports in the short term but has a positive relationship with export in the long term. Borensztein et al. (1998) investigated the effect of FDI on economic growth and included 69 developing countries. The study concludes that FDI contributes more to growth than domestic.

2 Methodology

The author has based on some previous studies, Görg and Strobl (2003), Alvarez and Görg (2005), Ferragina et al. (2009), Bandick and Görg (2010), and Franco and Gelübcke (2013), and also used method of estimating logistic model for panel data (Panel Data). Recommended research model is as follows:

$$ln\left(\frac{M_0}{1-M_0}\right) = \beta_0 + \beta_1 \text{AGE} + \beta_2 L + \beta_3 \text{SIZE} + \beta_4 I\&E + \beta_5 \text{HERF} + \beta_6 \text{Horizontal} + e_i$$

in which M_0 is the ratio of enterprises leaving the industry, which is determined based on the status of leaving the industry (Exit). If joint Exit is no longer active in year $t + 1$, Exit is 1 at year t; otherwise Exit is 0 (no longer operating enterprises including those that have changed or stopped) which is determined based on business codes in the survey data.

With *Gi* which is called the probability of occurrence status of closing business in year *i*, we have:

$$G_{\mathrm{i}} = \frac{M_i}{1 - M_i} = \frac{M(Y = 1)}{1 - M(Y = 1)}$$

$$G_0 = \frac{M_0}{1 - M_0} = e^{(\beta_0 + \beta_1 X_{1+\cdots+} \beta_k X_k)}$$

Under the condition that other factors remain unchanged, when the Horizontal variable increases to 1 unit, Gi will be written as:

$$G_i = \frac{M_i}{1 - M_i} = e^{(\beta_0 + \beta_1 \mathrm{AGE}_{+\ldots+} \beta_6 \mathrm{Horizontal}_{+1})} {}_{=e}{}^{(\beta_0 + \beta_1 \mathrm{AGE}_{+\ldots+} \beta_6 \mathrm{Horizontal})} {}_{*e}{}^{\beta k}$$

$$\text{or } G_i = \frac{M_i}{1 - M_i} = \frac{M_0}{1 - M_0} * e^{\beta k} \text{ so that } G_i = \frac{\mathrm{Go} * e\beta k}{1 + \mathrm{Go} * e\beta k}$$

Therefore, the marginal effect is determined as follows: When the variable Xk increases by 1 unit, the proportion of enterprises leaving the industry will change a quantity:

$$\Delta M = M_1 - M_0 = \beta_k * M_{0*}\left(1 - M_{0)}\right.$$

Thus, the logistic regression model is applied to the EViews quantitative economic statistics software to find out if the effects of the independent variables selected on the dependent variable are the ability to leave the industry in country.

We have selection of variable (Table 5.1).

3 Results

3.1 Descriptive Statistics

In the period of 2002–2013, the percentage of small and super-small businesses increased from 90% to 95.9%, and microenterprises increased from 53.1% to 70%. Medium and large enterprises always account for a small proportion and tend to decrease: in 2013–2018, only 3.9% of medium enterprises and 3.4% of large enterprises. According to the results obtained in table ..., it shows that Vietnam's enterprises are mostly young businesses with a low number of years of operation, which will affect the ability to leave the industry if the business is affected by negative shocks.

In terms of firm size, the mean of employees in the sample is 135 employees, with median value of 65 employees, and a large standard deviation of employees is 912 employees. This shows that Vietnamese enterprises are mostly small and medium scale, thus affecting the ability of many enterprises to exit the industry. In this section, the author uses salaries and bonuses to evaluate labor productivity and income of workers. The labor process includes many labor activities, using labor to

Table 5.1 Definitions of variables

Variable name	Symbol	Unit	Calculation method	Author previous research
Enterprise exit status	EXIT	1: 0:	If the business is not active in year t + 1, exit is 1 at five t; otherwise exit is 0	Görg; Franco and Gelübcke
Number of years of enterprise activities	AGE	Year	Statistics on the number of active systems of the enterprise since its inception	Bellone, Ferragina, Fackler, Franco and Gelübcke
Income	L^{n}_{mt}	Million VND/labor	Total salary and bonus on a worker of firm n, sector m, and year t	Görg; Franco and Gelübcke
Enterprise size	SIZE	Number labor	Statistics of the number of employees of the enterprise in the year	Audretsch and Mahmood; Mata and Portugal; Fackler
Import and export situation of enterprises	I&E	1: Have 0: Haven't	Statistics of import and export taxes arising in the year	Franco and Gelübcke; Alvarez and Lopez
Herfindahl industrial concentration index	HERF	Haven't unit	The Herfindahl index is an indicator that reflects the concentration of sellers in a market taking into account the total number of companies in a market and their relative size supply supplied to the market	
Market share of FDI in enterprises	Horizontal	%	Horizontal = percentage of revenue of FDI enterprises in the sector in which the business operates, is calculated by year and industry group based on the classification of different industries	

create labor productivity to make products. The labor process has wasted the labor force of workers to create products so workers must receive a sum of money to make up for the lost labor in the process of labor, which is the salary. This is what employees get after using their labor to create labor productivity to create products. The mean of labor income in enterprises is 78 million VND/labor for each year, and the median value is 62 million VND/labor. According to many researches and statistics, analyzing separate businesses that leave the industry shows that those leaving the industry are concentrated in low-income areas. According to data from the World Bank, fees and taxes that businesses have to pay for corruption and lubrication account for 40.8% of total profits. Accordingly, the development of enterprises is very difficult (Table 5.2).

Table 5.2 Descriptive statistics for variables in the model

	EXIT	AGE	L	SIZE	I&E	HERF	Horizontal
Mean	0.17	8.42	78.4197	135.06	0.08	276.90150	0.37219
Median	0.00	7.00	62.18952	65.00	0.00	136.91200	0.31289
Maximum	1	69	328.0000	105,590	1	9983.7923	0.9975
Minimum	0	1	−321.187	2	0	43.90143	0
Std. dev.	0.4671	9.1231	77.8156	912.217	0.278	592.9157	0.192314

Source: Author's computation using Eviews 9 econometric software

Taxes and fees of Thai businesses are only 17%, while Vietnam is double theirs. So where to get motivation for businesses to do? Moreover, technological innovation, management training, labor, etc., all of these require resources. If the tax rate is up to 40.8%, how much will it cost? Therefore, small and medium enterprises with little capital will have very few opportunities to survive in fierce competition market. Enterprises with FDI support will be more advantageous.

In the situation of import and export, the rate of leaving the industry in the group of enterprises with import and export activities is much lower than the group of enterprises without import and export activities. The most important thing now is how they stand in the domestic market and then think about competition outside. If the domestic consumers still cannot accept the enterprises, what opportunities do they have for outside consumers to accept, and the higher the ability of the enterprises to leave the industry.

According to HERF index, if HERF <1000, market is not centralized; $1000 \leq$ HERF ≤ 1800, the market is concentrated at a moderate level; and HHI > 1800, the market is concentrated at a high level, and most Vietnam businesses operate in noncentralized industries. The higher the concentration of the industry, the less competitive the industry is.

Horizontal index is an important indicator, showing that the share of FDI in the sector where businesses operate has a mean of 37%, the smallest group with a market share of 0% and the largest 99.75%, indicating the appearance of foreign enterprises is highly differentiated between industries. The greater the HERF index proves the greater the presence of foreign enterprises in the same manufacturing industry with domestic enterprises, so there is the possibility of competitive pressure on higher domestic enterprises and pressure to leave the industry which will also be higher.

The biggest challenge for Vietnamese enterprises is the low competitiveness. Opening the market, along with the opportunity to expand consumer markets, Vietnamese businesses face a huge challenge to compete with foreign businesses. Vietnamese enterprises are mostly small and medium, their self-control is not high, and their operating capacity and adaptability to the changing environment of the business are limited. When joining the WTO, businesses of all economic sectors face fierce competition with foreign businesses in the market of goods and services. Foreign enterprises have the advantage of large capital, so the quality and price are suitable, in addition to the experience of dominating the market of leading corporations in the field of international trade so this is also a competitive pressure for Vietnamese enterprises; businesses that are unable to compete will be eliminated.

3.2 Logistic Model

According to the research results, the entire results of the regression model as well as the estimation of the marginal effect when the independent variables change 1 unit (Table 5.3).

The regression results show that all regression coefficients of the independent variable in the model are statistically significant at the 5% significance level, in which the regression coefficients of AGE, SIZE, L, I&E, and HERF variables, Horizontal is statistically significant at the 1% significance level, the regression coefficient of variable SIZE is statistically significant at the 5% significance level. The estimation table shows the increasing trend of marginal impact when the current sector leaving rate of firms in country increases, specifically.

The regression coefficient of variable AGE is (−0.0052165), statistically significant at the 1% significance level, with the negative sign consistent with previous studies of Bellone (2008), Ferragina et al. (2009), Fackler (2012), and Franco and Gelübcke (2013). The results show that, assuming the rate of EXIT of domestic enterprises and other factors constant, when the AGE enterprise increases by 1 year, it will reduce the rate of industry EXIT to 0.031% and if the rate of Exit of domestic enterprise is 10%, 20%, 25%, and 30%, when the AGE increases 1 year, it will reduce the rate of industry EXIT to 0.052%, 0.061%, 0.081%, 0.092%, and 0.102%. It found that in enterprises with higher age, the risk of leaving the industry increasingly reduced. If we keep the small scale, enterprise cannot compete and locate in the world market. Enterprise must determine who to compete with. What to compete for? Enterprises need to connect with each other and compete for mutual

Table 5.3 Analysis of regression results

Dependent variable: Exit	
Independent variable	Coefficient
AGE	−0.0052165*** [0.003118]
L	−0.0037631*** [0.000122]
SIZE	−0.0007519*** [0.000045]
I&E	−0.531892*** [0.001276]
HERF	0.0000619*** [0.0000192]
Horizontal	0.3901281*** [0.0721891]

Source: Author's computation using Eviews 9 econometric software.
Note: 1. The standard errors are given in bracket
2. The notations *, **, *** imply that the coefficient is statistically significant at the level of 10%, 5%, and 1%, respectively)

development. In addition, enterprise needs to pay attention to developing human resources, investing in technology to reduce the cost of labor productivity.

L (Income) variable is also inversely related to the current industry exit rate. Accordingly, when other factors remain unchanged, assuming a current industry exit rate of 5%, the income of workers will be increased by 1 unit, which will cause the current industry exit rate of the enterprise to decrease 0.029%; this number will reach 0.038% if the current industry exit rate is 10% and 0.093% if exit rate is 30%. This is consistent with the study of Görg (2003) and Franco and Gelübcke (2013). The results imply that if enterprises increase labor income, they will reduce the ability of enterprises to leave the industry, but the increase in labor income is not easy without synchronous solutions. Henry Ford, the boss of Ford Motor Company, must decide when to pay workers higher than usual at the beginning of the twentieth century; there are practical thoughts on this issue. What is Ford's engine? Henry Ford later said: "We pay such a salary to place the company on a long-term basis. We build for the future. Low-paying enterprises have no future ... Paying USD 5 /eight-hour work day is one of the most amazing cost-cutting measures we have made". Evidence shows that such high salaries benefit the company. According to a technical report written at that time, Ford's high wages have wiped out laziness and opposition. Workers have become extremely easy-going and can say with certainty since the year-end. In 1913, there was no day Ford's factory did not significantly cut its costs.

According to many studies, the average labor quality of an enterprise depends on the level of wages that the enterprise pays its employees. If businesses pay not high enough, the best workers will leave to find jobs in other businesses, so the average quality of labor decreases. By paying higher wages than the equilibrium of the labor market, businesses reduce adverse selection and maintain and improve the average quality of the labor force, leading to high labor productivity. Raising wages for workers is a difficult issue for Vietnam's small and medium enterprises. In Vietnam, the quality, structure, and efficiency of labor use are still low; the level of organization, management, and use of resources are inadequate; there is limited management and enterprise management capacity; there are also some "bottlenecks" on institutional reforms and administrative procedures. By the end of 2017, only 21.5% of the labor force in the whole country had been trained with certificates, of which rural areas were very low, only about 13%. The labor structure according to the training level is unreasonable; the shortage of manpower is the practical engineers, high-level technical workers. The connection of supply and demand in the labor market has many shortcomings. Unemployment among young or unsuitable workers among jobs and training levels is still quite common. The exploitation and employment of workers who have worked and studied abroad and returned to the country are still limited.

The sense of compliance with labor discipline is not high; labor lacks soft skills, limited language skills. This is a great barrier to improving labor productivity. Low labor productivity is associated with high difficulties for businesses to pay. Businesses that are unable to pay high salaries of other businesses are more likely to compete, and the ability to leave the industry is more likely to occur. The regression coefficient of SIZE variable is (−0.0007519), which is statistically significant at the 1% significance level, and the negative sign of the regression coefficient is consistent with previous studies such as Audretsch and Mahmood (1995), Mata and Portugal

(1994), Görg (2003), and Franco and Gelübcke (2013). Provided that other factors remain unchanged, when the company increases by one employee, it will reduce the rate of leaving the industry 0.003% assuming the current rate of leaving industry is 5%. With the assumption that the current rate of leaving the industry is 30%, when the enterprises increase by one employee, the industry leaving rate will decrease by 0.014. This indicates that if attributed, the larger the firm size, the more sales and the rate of leaving industry will be lower (Table 5.4).

For I&E of enterprises, the regression coefficient was −0.531892.; this number is statistically significant at 1% significance level. With the results obtained in the context of other factors remaining unchanged, when enterprises have import and export activities, the industry leaving rate will be 3.213% lower than that of enterprises without import and export activities. Thus, the variable I&E is absolutely statistically significant and negative, which is consistent with the studies of Alvarez and Görg (2005) and Franco and Gelübcke (2013). This is in line with expectations because businesses stand on the domestic market, are accepted by domestic consumers, and then think about competition outside. If domestic consumers still cannot accept businesses, they do not have the opportunity for outside consumers to accept. Therefore, enterprises that are able to export prove that the quality of goods is widely accepted; these enterprises have a better chance of survival and development than those that cannot export and import.

The Herfindahl index measures the level of competition, calculated through the HERF variable, the regression results calculate the HERF regression coefficients is 0.0000619, positive and statistically significant at the significance level %. The sign of the regression coefficient is consistent with the expectations and studies of Görg and Strobl (2004), Mata and Portugal (2002), and Gelübcke (2013). Provided that other factors remain unchanged and assuming the current rate of leaving industry is 5%, when HERF increases by 1 unit, it will increase the rate of leaving the industry by 0.00031. The HERF index ranges from 0 to 10,000; the higher the HERF, the higher the concentration of the industry; however, it also shows the monopoly in the industry in which the business operates, when the industry's revenue is concentrated in a small number of businesses which will increase the ability of businesses to leave the industry.

The Horizontal variable shows the presence of FDI in the operating industry with a regression coefficient of 0.3901281, which is statistically significant at the 1% significance level. This is an important variable to explain the impact of FDI on the departure of domestic enterprises. The positive sign of this variable regression coefficient is consistent with initial expectations and studies of Mata and Portugal (2001), Görg and Strobl (2004), and Franco and Gelübcke (2013). When the market share of FDI in the industry operates in a positive relationship with the rate of leaving the industry of domestic enterprises, particularly in the context of other factors, assuming the rate of leaving the industry currently 5% and increasing. Based on the results in Fig. 5.1, it is clear that the proportion of enterprises leaving the industry is relatively stable during the period 2000–2003 in the range of 12.55% and the period 2004–2007 in the range of 14.48%. However, after joining WTO in 2007, this number has increased quite high and especially increased strongly in the period 2008–2011 which is 23.19%. In general, during the period 2000–2003, the average ratio of enterprises leaving the industry was 12.55%, indicating that if foreign

Table 5.4 Estimate of the marginal effect

		The rate of leaving the current industry (M_o)					
		5%	10%	15%	20%	25%	30%
Dependent variable	Coefficient	Marginal effect when the independent variable changes by 1 unit $\Delta M = M_1 - M_0 \approx \beta_K * M_0(1\text{-}M_0)$					
AGE	−0.0052165	−0.031	−0.052	−0.061	−0.081	−0.092	−0.102
L	−0.0037631	−0.029	−0.038	−0.052	−0.071	−0.082	−0.093
SIZE	−0.0007519	−0.003	−0.004	−0.006	−0.008	−0.009	−0.014
I&E	−0.531892	−3.213	−4.129	−5.189	−8.329	−9.210	−10.291
HERF	0.0000619	0.00031	0.00052	0.00061	0.00073	0.00094	0.00208
Horizontal	0.3901281	1.520	2.541	4.152	6.762	7.902	9.201

Source: Author's computation using Eviews 9 econometric software

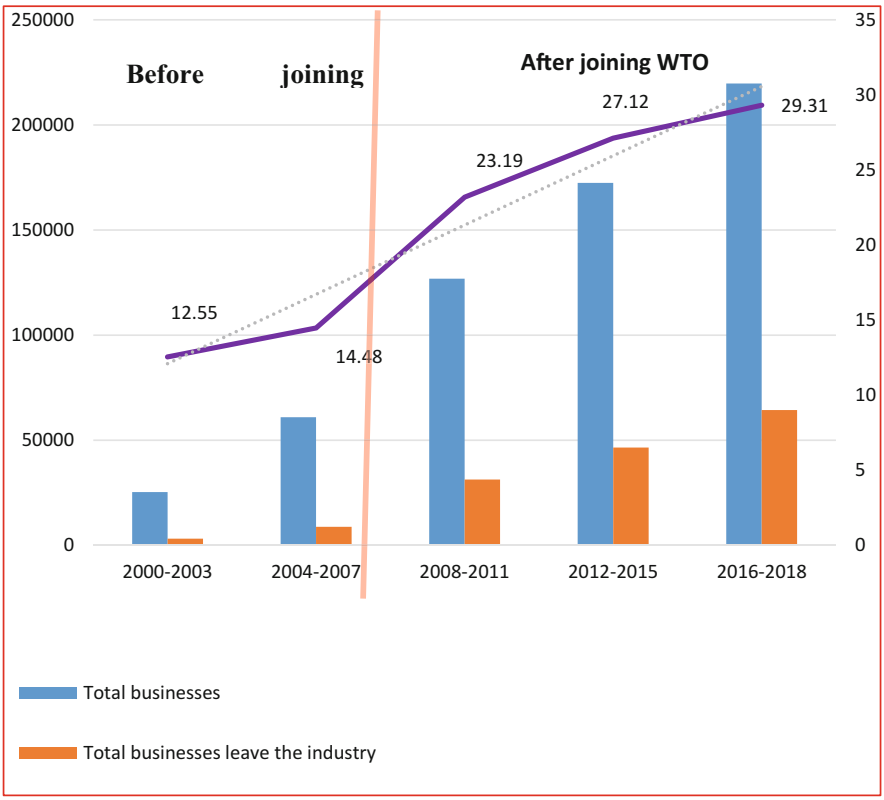

Fig. 5.1 The rate of leaving industry of domestic enterprise (Sources: Calculated by authors)

enterprises increased their market share by 1%, the proportion of enterprises leaving the industry would increase by 4.89% (12.55 × 0.3901281) and 2004–2007 by 5.65%. Meanwhile, under the impact of the global financial crisis that started in 2008 and Vietnam's accession to the WTO, the rate of leaving the industry has actually reached a rather large number of 23.19%. At the same time, the rate of leaving the industry of enterprises is at risk of increasing when Vietnam joined WTO; the competitiveness of Vietnamese enterprises is still poor. Therefore, in the period 2016–2018, if FDI appears 1% more, it will cause domestic enterprises to leave the industry at the rate of 11.43%. It can be seen that this is a rather large impact, implying that the survival of Vietnam enterprises is very sensitive in the competition for business competition with foreign enterprises in Vietnam. When joining the WTO, the monopoly power/market dominance of many domestic enterprises (capital, if any) is difficult to maintain for a long time. Moreover, according to WTO regulations and many regional commitments, traditional interventions of the State to favor a number of industries/enterprises or create advantages for domestic enterprises compared to foreign companies will also be significantly restricted. Thus, the enhancement of VAT and competitiveness of enterprises depends greatly on the efforts of enterprises themselves. In fact, the WTO still allows the use of a number of

support measures. However, effective and unified industrial strategy/policy with WTO rules should be more comprehensive, covering the economy rather than toward certain sectors/businesses based on the bias. The state role in development has not decreased. After nearly 12 years of joining the WTO, Vietnamese enterprises were no longer surprised with the global game, along with the challenge that there were many opportunities when investing to expand production and marketing. The school, especially with the export market, therefore the industry leaving rate tends to decrease in the period of 2008–2011. From 2007 until now, when Vietnam's economic growth slowed, tens of thousands of domestic enterprises were ineffective, and foreign direct investment (FDI) emerged as a growth driver, good onions.

That situation raises the issue of internal relations and external forces. When the economy faces difficulties, many domestic enterprises have to close, stop operations, etc., and many FDI enterprises continue to expand and invest. This shows that not only are Vietnamese enterprises more financially, administratively, but FDI enterprises are more capable of enduring and resilient to difficulties, as well as the ability to take advantage of opportunities. It is the reality of more than a third of the century attracting FDI, a long enough time to confirm that concerns about FDI enterprises operating in the market, causing confusion about price and currency, are not basic.

4 Conclusions and Discussion

Research has used regression models to analyze the impact on industry disassociation through factors of years of operation, size, income, import and export status, level focus of the industry, and FDI market share. After using the regression model to process data and make forecasts, the results showed that in addition to the above business and industry factors, the FDI market share has had certain impacts on the industry of domestic enterprises. In the process of attracting FDI, Vietnam not only expects investment capital to increase, or the economy will grow strongly thanks to this area, but also expects that the FDI to Vietnam will have a spillover effect on the domestic economy through the transfer of modern technology and promoting the development of supporting industries. Although the study has shown the existence of the overwhelming impact of FDI on domestic enterprises, it is not so that we find ways to limit the activities of FDI enterprises that need to have synchronous solutions on institutions, finance, credit, etc. in the direction of supporting domestic enterprises to quickly overcome stagnation in production and business and at the same time have policies to encourage expansion of linkages between FDI enterprises and domestic enterprises to create a rapid spread through technology transfer, training of high-quality human resources, and effective participation into the global product value chain. In addition, it is found that small-scale enterprises are more likely to leave the industry than large-scale enterprises, suggesting that small and medium enterprises are more vulnerable than large enterprises. Another difficult point that small and medium enterprises are facing is attracting high-quality human resources, management staff with good capacity for their production and business. Research has found that income or labor productivity also affects the ability of

domestic firms to leave the industry. However, the competitive opportunities of small and medium enterprises in attracting good and qualified human resources face many difficulties.

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Chapter 6
Analysis of the Factors Affecting Satisfaction of the Quality of Seafood Logistics in Vietnam

Hong Van Dao, Van Quang Do, Thi Minh Ngoc Vu, and The Kien Nguyen

Abstract The paper analyzes the factors affecting customer satisfaction with the quality when using Vietnam's seafood logistics service through SEM (structural equation model). From the result of this model, the authors found five groups of factors affecting satisfaction with seafood quality, including human resources in logistics, technology, delivery and product packaging, shipping capacity, and reputation of enterprises. All of these factors have a positive impact on this service. The meaning of this study is to give the useful references in planning policies for seafood logistics in Vietnam.

Keywords Structural equation model (SEM) · Seafood · Logistics · Quality of service

1 Introduction

Vietnam is a country rich in natural resources, especially water and marine resources. This explains why the fisheries industry has grown strongly and played an important role in Vietnam's export sector. In fact, the fisheries sector accounts for a large proportion of GDP. To promote fisheries, a modern seafood logistics system needs to be developed. Although many researchers have been working on logistics

H. Van Dao
Hanoi University of Natural Resources and Environment, Hanoi, Vietnam

Foreign Trade University, Hanoi, Vietnam

V. Q. Do (✉)
Thuyloi University, Hanoi, Vietnam

T. M. N. Vu
Foreign Trade University, Hanoi, Vietnam

T. K. Nguyen
VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam

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and fisheries, works that combine these two areas on the same subject and research on how to develop logistics in the fisheries industry are not universal.

Nguyen has researched and developed a system to support shipping planning for car companies based on genetic algorithms. Shipping plays an important role in an integrated economy, evidence that transport volumes have increased over the years and are expected to continue to increase in the near future. For this reason, logistics providers are forced to enhance their competitiveness in terms of both price and quality by providing efficient services. Therefore, many researchers have been interested and analyzed, learn, and come up with solutions to enhance both the quality and quantity of related services. First, in developed countries, the number of small, medium, and large enterprises in this sector is very large. However, they have mutual support to have a better service chain. In developing countries, enterprises operating in the transport industry operate quite sporadically and compete fiercely with each other.

Megan explored shipping issues at the time, especially about how and how much seafood was shipped to the western federal markets of North Carolina. The study also identifies challenges and opportunities in improving the supply chain from east to west.

The three biggest challenges for shipping seafood from east to west are related to the availability of logistics, products, marketing, and education. The main reason for the major logistics problem is the lack of a centralized distribution base for seafood in western North Carolina. Logistics can be improved by establishing a domestic distribution center with cold storage capacity to facilitate road transport. The study explores shipping issues in the seafood industry, namely, how and how much seafood is shipped to state markets in western North Carolina. The thesis also identifies challenges as well as opportunities in improving the supply chain from east to west. The author identified five major wholesale seafood distributors along the coast and two domestic distributors with routes set up to serve goods, groceries, retail markets, and food distributors, in all major metropolitan areas, including the western areas of North Carolina and the surrounding states.

The study identified and strengthened alternative or complementary supply chains and the domestic market along the corridor from North Carolina to Baltimore, Philadelphia, New York, and New Bedford. North Carolina seafood provides more for local locations that will contribute to brand recognition and avoid a loss of value.

2 Methodology

2.1 Base Construction Model

Based on the preliminary research findings and an overview of the study and based on relevant arguments about customer satisfaction with the quality of logistics, from a bridge (customer) perspective, due to the point of seafood logistics, through the needs and researches of customers, to apply the five perspectives of SERVQUAL,

the authors have built a set of criteria to evaluate the quality of marine logistics services including seven components: (1) company reputation, (2) manpower logistics, (3) factor transport capacity, (4) delivery and packaging factors, (5) technology factors, (6) satisfaction factor, and (7) loyalty factor.

To verify the relationship between the effects studied, the linear structure model (structural equation model – SEM) is the most suitable proposed model. The SEM specifies the relationship between basic variables (not direct measurements) and observable variables, while clearly showing the relationship between the basic variables.

2.2 Data Collection

According to Hair (1998), for the implementation of the EFA factor analysis, the size of the sample applied in the study must be at least five times the total number of observed variables. The study has 33 observation variables, so the minimum sample number is 33 * 5 = 165; for multivariable regression analysis: The minimum sample size to be achieved by the formula is 50 + 8 * m (m: independent variable number) (Tabachnick and Fidell, 1996). The study has 6 independent variables, so the minimum sample size is 50 + 8 * 6 = 98 observations. As such, to determine the factors that affect the level of satisfaction of seafood logistics service, research has conducted in-depth interviews and survey with structural inquiry for aquaculture enterprises, exploiting and processing seafood on the whole country. The number of votes obtained is 500 votes, of which 492 are enough information to be used for analysis (98.4% ratio).

The interview card is designed with closed questions to ask businesses to evaluate about the aspects related to the credibility of the company's logistics responsibilities, logistics' human resource, transportation capability, delivery and packaging product, Technology, Satisfaction and Brand loyalty. Reviews use Likert scale with five levels: 1 = strongly disagree/very dissatisfied, 2 = disagree/dissatisfied, 3 = neutral, 4 = agree/satisfied, and 5 = strongly agree/very satisfied.

2.3 Data Processing

In this study the authors applied the method of analyzing the model equation structure (structural equation model—SEM), which uses the SPSS 22.0 and AMOS software version 20.0, which consists of four steps: the analysis of the reliability coefficient Cronbach's alpha, exploratory factor analysis (EFA), the affirmation analysis (confirmatory factor analysis—CFA), and analyzing the structural equation model (structural equation model—SEM), specifically as follows:

2.3.1 Step 1: Evaluate the Reliability of the Scale

Cronbach's alpha (CA) coefficient is used to assess the reliability of the ladder for each observation variable belonging to the factor groups. Peterson (1994) said that any factor with a CA less than 0.6 should be excluded from the research model. According to Bernstein and Nunnally (1994), observation variables with a total correlation coefficient of less than 0.3 are considered garbage variations, which lead to a conclusion of rejecting the model.

2.3.2 Step 2: Analyze the Discovery Factor (EFA)

EFA allows to describe the correlation between impact variables, known as "factors." EFA is used in cases where the relationship between the observed variables and the underlying variable is unclear or uncertain. EFA is conducted in an explored manner to determine the scope and level of the relation between observation variables and the base factors, as the basis for a set of measurements to shorten or reduce the number of observations which are uploaded to the base factor. Meyers et al. (2016) said that, in EFA, the method of extraction of principal component analysis in conjunction with Varimax rotation is the most commonly used method. A condition for EFA is the following requirements: factor loading >0.3, $0.5 \leq \text{KMO} \leq 1$, Bartlett's test having statistical significance (Sig. <0.05), and total variance percentage > 50%.

2.3.3 Step 3: Analyzing the Assertions Factor (CFA)

CFA is used appropriately when researchers have information about underlying variable structures. CFA may be the next step of EFA to test whether there is a theoretical model that is the basis of a set of observations. Following the EFA implementation, the scales were further tested, using the Confirmation Factor Analysis (CFA). The purpose is to ensure more about reliability and value of scale based on known factors to limit the error in determining the factor. A set of indices to measure the goodness-of-fit of the model with the sample information is used: Chi-square (CMIN), Chi-square adjusted to degrees of freedom (CMIN/df), Comparative Fit Index (CFI), Tucker & Lewis Index (TLI), Root Mean Square Error Approximation (RMSEA). If $1 < \chi 2/\text{df} < 3$, in some studies, two cases $\chi 2/\text{df} < 3$ (with sample $N \leq 200$) and $\chi 2/\text{df} < 5$ (with sample $N \geq 200$) were distinct the model is considered to be good. If a model attracts GFI, CFI, TLI ≥ 0.9, $p > 0.5$, CMIN/df ≤ 3, then the model is considered appropriate. Once the model attracts a CFI and TLI ≥ 0.9, CMIN/df ≤ 0.2, RMSEA ≤ 0.08, it is consistent with the data.

2.3.4 Step 4: Modeling Equation Structure (SEM)

The structural equation model (SEM is the following step of EFA and CFA, which defines a set of regression equations at the same time. In this study, the SEM was carried out with the aim to identify the factors of influence and the degree of influence of each factor to "customer satisfaction of seafood logistics services."

3 Results

3.1 Assessment of the Quality Factors for Seafood Logistics Services

3.1.1 The Prestigious Group Responsible for Logistics Companies

The result of the analysis of the "corporate credibility" factor suggests that the observation variables have low average values, and the differences are not much, namely, the observation of "companies always report the progress of services – UTN1" with the lowest price among the 3.1024 factors; the smallest value is 1, and the largest is 4. Level 3 is the neutral level, showing the level of interest of the seafood logistics businesses on the reporting of progress in the process of performing the services, this in accordance with the fact that multi-segment customers using the service do not capture the information in the logistics cycle, until the products are consumed by customers. In contrast, the observation variable "the company has a guarantee of delivery time—UTN2" has the highest average rating value (3.6424). However, this value is not high, which indicates that although the companies always strive to ensure the delivery time, due to issues of poor transport connections and synchronized infrastructure, traffic congestion and incidents often occur (Table 6.1).

Table 6.1 Assessment of reputation and responsibility of the companies

Fundamental factors	N	Min	Max	Mean	Se
The companies always report on the progress of services (UTN1)	492	1.00	4.00	3.1024	0.83702
The companies have guaranteed delivery time (UTN2)	492	2.00	5.00	3.6424	0.69840
When there is a problem, the companies can show their sincerity and readiness in problem-solving (UTN3)	492	1.00	5.00	3.2710	0.76457
Is the sum insured and compensation properly paid according to the contract (UTN4)	492	1.00	5.00	3.4201	0.92031
Declare accurate customs procedures (UTN5)	492	1.00	5.00	3.3617	0.74183

Source: Analysis from the results of the investigation

3.1.2 The Factor of Human Resources in Logistics

The results of the "logistics' human resource" factor analysis show that the observation of "service speed of company employees is on time and meets the requirements of customers—NL4" has an average value of the lowest price among the 3.3192 factors, the smallest value is 1, and the largest is 5. In fact, the current human resources in seafood logistics are mainly apprenticeships, who learn through the process of working. The proportion of employees through formal training is very limited, thus leading to the low skills of processing the businesses. Therefore, improving the quality of human resources working in seafood logistics would become a special concern in developing logistics development strategies in the future. However, the group of factors "the service attitude of employees of the company has the passion and dedication—NL2," which reaches 4.2796, is well-appreciated by customers. This figure shows the dedication and love of seafood logistics' staff (Table 6.2).

3.1.3 The Factor of Transportation Capacity

The results of the "transportation capability" factor analysis show that the observation of "company's warehouses meet the recipient's standards – NLVC2" has the lowest average value price among the factors, at 3.9892. Reality shows that currently the level of concentration of the warehouses is not high and the quality is also not high, which leads to the need to build a centralized seafood logistics system, thereby planning and building quality assurance warehouses. In terms of the variable observation "the company can transport goods by air, waterway if requested," the authors found that air freight of Vietnam is relatively developed currently. Although not all of the seafood logistics companies have the service of aviation and waterway transportation, if seafood companies need to use these types of transport, logistics companies are ready to look for air freight and waterway services to meet the needs of customers. Besides, the "means of transportation of the company is equipped with optimum equipment suitable for seafood items such as cold container, cold storage, etc.," and the "cold supply chain of the company that meets the requirements of

Table 6.2 Logistics' human resource assessment

Fundamental factors	N	Min	Max	Mean	Se
The service style of company employees is professional (NL1)	492	3.00	5.00	3.6129	0.61569
The service attitude of company employees is warm and dedicated (NL2)	492	2.00	5.00	4.2796	0.86200
Professional qualifications and skills of employees (NL3)	492	2.00	5.00	3.4043	0.86260
The service speed of company employees is on time and meets the requirements of customers (NL4)	492	1.00	5.00	3.3192	0.72931

Source: Analysis from the results of the investigation

Table 6.3 Transportation capacity assessment

Fundamental factors	N	Min	Max	Mean	Se
The company's transportation vehicles are equipped with optimal equipment suitable for seafood products such as refrigerated containers, cold storage (NLVC1)	492	1.00	5.00	3.2619	0.99253
Does the company's warehouse meet the recipient's standards (NLVC2)	492	1.00	5.00	3.0082	0.79719
The company can transport the goods by air or by water if required by customers (NLVC3)	492	2.00	5.00	3.8753	0.86447
Does the company's cold supply chain meet the seafood quality standard (NLVC4) requirements	492	1.00	5.00	3.2936	0.69274

Source: Analysis from the results of the investigation

Table 6.4 Evaluation of delivery and packaging products

Fundamental factors	N	Min	Max	Mean	Se
Delivery speed and packaging of the company's products can meet your requirements (GDG1)	492	1.00	5.00	3.3183	0.84437
Packaging is sure and full of important steps to ensure the quality of seafood (GDG2)	492	2.00	5.00	3.5437	0.61715
The company pays attention to the quality of seafood when shipping and delivery (GDG3)	492	1.00	1.00	3.3867	0.76524
The company supports loading and unloading and transporting goods from the port to the place of receipt and warehousing (GDG4)	492	1.00	5.00	3400	0.56831

Source: Analysis from the results of the investigation

seafood quality standard" has a low average value rating; this shows that the equipment needed to meet the specific needs of the standard of seafood logistics is limited. This is a large void that needs to be filled in the future (Table 6.3).

3.1.4 The Factor of Delivery and Packaging Products

The results of the "delivery and packaging product" factor analysis show that the observation of "delivery speed and packaging of the company to meet the requirements of our party" has the lowest average price level in the 3.3183 factors, the smallest value is 1, and the largest is 5. This shows that logistics companies cannot meet the need of urgent logistics services, due to the limitation in many stages, including human resources and equipment. In contrast, the observation margin "The packaging of products is durable and includes all important steps to ensure the quality of seafood" has the highest average value, at 3.5437, which shows that seafood logistics businesses have paid attention to the packaging process and fully implemented the steps of the packaging process. However, the average level is still not very high, so businesses need to pay more attention to guarantee the quality of seafood products (Table 6.4).

Table 6.5 Technology evaluation

Fundamental factors	N	Min	Max	Mean	Se
Technology that affects the price and quality of logistics services (CN1)	492	1.00	5.00	3.2473	0.77245
Information technology companies exploiting good logistics services (CN2)	492	1.00	5.00	3.6645	0.62914
Customers easily track the status of goods after sending via software (CN3)	492	1.00	5.00	3.7295	0.80136
Can the company's service chains meet the robotization factor (CN4)?	492	1.00	5.00	3.4271	0.50136

Source: Analysis from survey results

3.1.5 Technology Factor

The results of the technology factor analysis show that the observed variable "technology has a great impact on the price and quality of logistics services – CN1" has the lowest average value of 3.2573, which shows that when applying technology into seafood logistics chain, the service values do not change much. In contrast, the observed variable "customers easily track the status of goods after sending via software—CN3" has the highest average value, at 3.7295, which shows that when seafood logistics enterprises use software, checking and monitoring the status of goods circulating will be more easy. Furthermore, using software also helps to combine trips in order to avoid one-way delivery, which is very wasteful. However, the number of enterprises applying software in monitoring the process of circulation and cold storage is not high (Table 6.5).

3.2 Application of SEM in Analyzing Factors Affecting Customer Satisfaction with the Quality of Seafood Logistics Services

3.2.1 Analyze the Reliability of the Scales by Cronbach's Alpha

The results of a scale reliability assessment are carried out through the calculation of Cronbach's alpha for seven factor groups across certain loops. The results obtained (Table 6.6) indicate that the SHIFTS of the factor groups are greater than 0.6 and the total correlation coefficient is greater than 0.3. If one of the basic factors in the group is eliminated, a smaller CA will occur. Cronbach's alpha results for "company credibility factor" suggest the variables UTN2, UTN3, and UTN4 are satisfactory and retained to analyze the discovery factor in the next round. Cronbach's alpha results for "company reputation responsibilities" through three loops show the variables UTN2, UTN3, and UTN4 are satisfactory and retained for analysis of the discovery factor in the next round. Cronbach's alpha results for "logistics manpower factor" through two loops indicate the NL1 variable and NL3 and NL4 are

Table 6.6 Reliability assessment results measurement

No.	Sign	Observed variables	Correlation coefficients	Cronbach's alpha if variable type
1. Reputable responsibility Cronbach's alpha = 0.689				
1	UTN2	The company has a guarantee of delivery time	0.551	0.559
2	UTN3	When problems arise, the company can show sincerity and readiness in problem-solving	0.561	0.613
3	UTN4	The sum insured and compensation made strictly according to the contract	0.505	0.650
2. Human resource of logistics Cronbach's alpha = 0.851				
4	NL1	Service style of company employees has an engineer's career	0.739	0.808
5	NL3	Professional qualifications and skills of employees	0.756	0.762
6	NL4	The service speed of company employees is on time and meets the requirements of customers	0.720	0.800
3. Capacity of transport Cronbach's alpha = 0.837				
7	NLVC1	Transportation of the company is equipped with the optimal equipment suitable for seafood items such as cold containers, cold storage, etc.	0.703	0.771
8	NLVC2	The company's warehouse meets the standards of the recipient	0.704	0.770
9	NLVC4	The company's cold supply chain meets the seafood quality standard requirements	0.692	0.782
4. Delivery and packaging Cronbach's alpha = 0.862				
10	GDG1	Speed of delivery and packaging of the company's products can meet your requirements	0.721	0.822
11	GDG3	The company pays attention to the quality of seafood when shipping and delivery	0.805	0.746
12	GDG4	The company supports loading and unloading and transporting goods from the port into the receiving and warehousing	0.694	0.849
5. Technology Cronbach's alpha = 0.862				
13	CN1	Technology affects the price and quality of logistics services	0.671	0.866
14	CN2	Information technology companies exploiting good logistics services	0.695	0.849
15	CN3	Customers easily track the status of goods after sending via the software	0.861	0.687
6. Brand loyalty Cronbach's alpha = 0.879				
16	TT1	Do you want to change the company about the logistics services are cooperating?	0.794	0.803
17	TT2	Are you ready to use their logistics service again?	0.762	0.833
18	TT3		0.745	0.848

(continued)

Table 6.6 (continued)

No.	Sign	Observed variables	Correlation coefficients	Cronbach's alpha if variable type
		Are you willing to recommend another company to use logistics with them?		
7. Satisfaction Cronbach's alpha = 0.872				
19	HL1	Are you satisfied with the quality of logistics they have provided?	0.732	0.840
20	HL3	Satisfaction on service prices	0.765	0.811
21	HL4	Satisfaction about the payment method	0.770	0.807

Source: Analysis from the results of the investigation

satisfactory. Cronbach's alpha results for "shipping capacity elements" show through two loops that the variables NLVC1, NLVC2, and NLVC4 are satisfactory. Cronbach's alpha results for "shipping and packaging elements" show through two loops that the variables GDG1, GDG3, and GDG4 are satisfactory. Cronbach's alpha results for "technological elements" show through two loops that the variables CN1, CN2, and CN3 are satisfactory. Cronbach's alpha results for "element satisfaction" show through two loops that the variables HL1, HL3, and HL4 are satisfactory. The result of Cronbach's alpha "brand loyalty factor" shows that the TT1, TT2, and TT3 MYDINH variables are both satisfactory and retained to analyze the discovery factor in the next round. As such, the resulting obtained 21 observed variables were introduced in EFA.

3.2.2 Exploratory Factor Analysis (EFA)

21 variables take part in the factor analysis which includes principal axis factoring extraction, promax rotation, and KMO and Bartlett tests measuring the fit of the sample. The factor loading is at least 0.5 which assures the practical significance of the EFA, the results of the exploratory factor analysis (EFA) undergo several qualifying rounds, obtained: Table result 7 shows $0.5 < \text{KMO} = 0.689 < 1$, conclusion: The factor analysis is appropriate for the actual data:

- Test the correlation between measurement variables (Bartlett's test).
  - Testing H0 hypothesis: the level of correlation of zero variables.
  - The results of Bartlett's test with a value of Sig. = 0.000 < 0.05; conclusion, measurement variables correlated together in each factor group.
- Inspection of the variance of factors (% cumulative variance).

In the analysis results table, total variance explained in the Component Line No. 7 and the cumulative % column has the variance value accrual factor of 77,533% > 50% which meets the standard.

3.2.3 Confirmation Factor Analysis (CFA)

After performing EFA, the scales are inspected again, by the factor analysis method of the CFA affirmation. The aim is to ensure more certainty about the reliability and value of the scale based on a number of predefined factors to limit mistakes in determining factors (Hair, 1998). The CFA results (Fig. 6.1) show that the indicators assessing the relevance of the theoretical model create results of GFI = 0,907, TLI = 0,960, CFI = 0,968, and RMSEA = 0.020. Therefore this model fits into the actual data. It is possible to conclude that the measurement components "satisfaction of the quality of Vietnam Seafood Logistics" with the independent factors achieved the value of discrimination (Fig. 6.1).

3.2.4 Modeling Structural Equations

In this study, the SEM was carried out with the aim to determine the factors of influence and the degree of influence of each factor to "satisfaction in the quality of seafood logistics services." The SEM was conducted in analysis starting from the initial proposed research model and then conducting calibration of the model to better model.

The results of the CFA test by AMOS software follow the principle of correction of relations with mi > 4 (Modification Indices, which is a correction factor with the change of $\chi 2$ on a degree of freedom), but this adjustment must ensure the appropriate theoretical and implied meanings of practical terms. After making adjustments, the CFA results showed that indicators of theoretical model conformity were significantly improved ($\chi 2/df = 1.115$, GFI = 0,902, TLI = 0,939, CFI = 0,950, RMSEA = 0.025). Therefore, this model fits into the actual data. Moreover, the regression factor between the satisfaction factors and the impact factor is the "prestige responsibility of the company," "transportation capacity," "logistics and packaging," "technology," and "manpower" which are less than 1 and different from 0 in a statistically meaningful way. Thus, it is possible to conclude that the component measures "satisfaction" with the independent factors achieve a distinct value.

The results of the study show that the factors affecting the satisfaction of quality of seafood logistics are as follows: The factor of human resources in logistics is 0229; technological factor is 0367; the delivery and product packaging factor is 0132; the transport capability factor is 0412; the prestigious of the company factor is 0149; and the satisfaction of logistics service impacts the customer loyalty factor is 0.527 (Fig. 6.2).

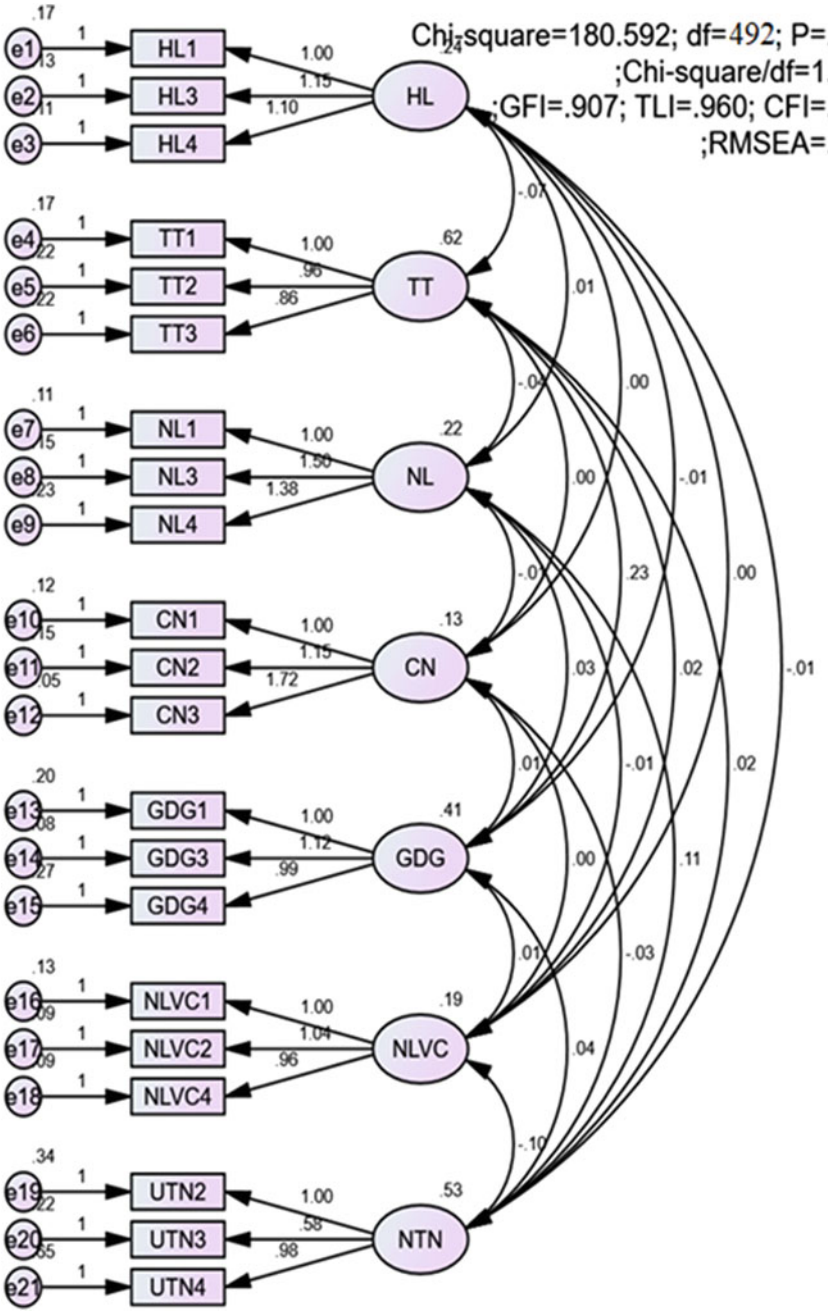

Fig. 6.1 CFA model of the study (Source: Analysis from the results of the investigation)

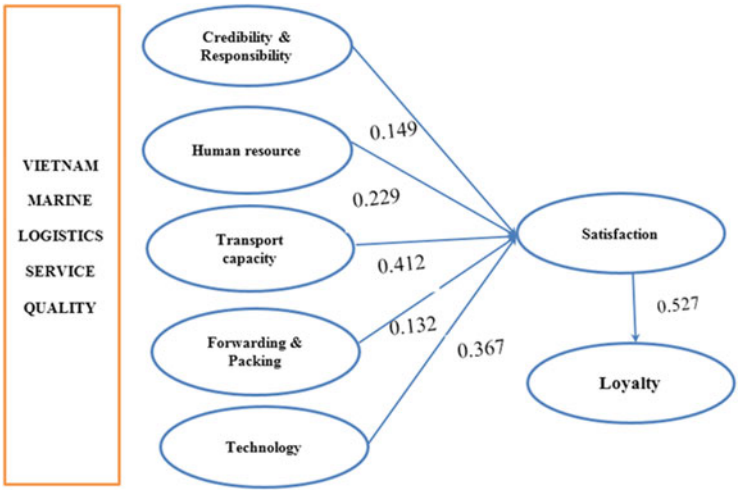

Fig 6.2 Model of factors affecting the satisfaction of seafood logistics service quality

4 Discussion

The research results show that there are five groups of factors that affect seafood quality satisfaction, including human resources in logistics, technology, delivery and packaging of products, shipping capacity, and reputation and responsibility of the seafood industry. These factors have a positive impact on the satisfaction of the quality of seafood logistics services, or in other words, when developing these factors, the factor of satisfaction with product quality will increase, thus promoting the development of Vietnam's seafood logistics. The factor with the biggest impact is shipping capacity, in which transport equipment, warehousing, and ensuring product quality standards play a key role. Therefore, in order to develop seafood logistics, the government should have policies to support businesses loans for buying equipment. Moreover, the authorities need to develop product quality standards and build connected and synchronized warehouses. The factors with the decreasing levels of influence are technological factors, logistics human resources factor, and reputation factor of the companies' responsibility. The lowest impact factor is the delivery and packaging of products; however, this factor also works in the same direction, so in order to promote the development of seafood logistics, it cannot be underestimated. The results of this study contribute to the development of seafood logistics policy making process of macro-management agencies and seafood logistics enterprises.

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Chapter 7
Fight Against Counterfeit Goods Related to IP Infringement: Criminal Perspective and Judiciary Role in Vietnam

Hoang Van Thang

Abstract This article provides a legal analysis of the trademark counterfeiting enforcement framework in the criminal perspective in Vietnam. By scrutinizing the statutes to prosecute and convict trademark counterfeiters and relying on criminal cases, the author found that (1) there remains a confusion of *actus reus* of the offense of infringing upon industrial rights to trademark; (2) the crime of trademark counterfeiting overlaps with the crime of manufacturing and/or trading counterfeit goods, while the case law brings a useful illustration of this issue; and (3) there has not been necessary judicial guidance on *commercial scale*, *damages*, and *values of infringing goods* as vital requirements of the crime of trademark counterfeiting; despite that, the cases provide useful interpretation of these standards. Based on the findings, to strengthen the criminal regime in the fight against counterfeit goods related to IP infringement, the author would give several innovative recommendations on legislation and policy, which could help Vietnam achieve sustainable social-economic development in the long run.

Keywords Counterfeiting · IP infringement · Crime · Criminal Code · Sustainable social-economic development

1 Introduction

Counterfeiting has been considered as "the economic crime of 21st century" (McDonough, 2007) with global menace to the sustainable social-economic development. Counterfeit products hurt the economy as well as cause harmful, even deadly, effects on the environment and human beings because of their use of ingredients and materials of bad or toxic quality. Moreover, counterfeiting often involves the infringement of an intellectual property right (e.g., trademark) that

H. Van Thang (✉)
Legal Department, Supreme People's Procuracy of Vietnam, Hanoi, Vietnam

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should be a key tool for the innovation and growth of any modern economy, thereby becoming the growing threat hampering businesses' efforts in a sustainability perspective. Also, it has been suggested that counterfeiting of goods related to IP infringing has not existed in isolation due to organized criminals that have utilized it as an immense source of profits and a golden means of creating networks for other crimes like the trafficking of human beings, drugs, and weapons, the money laundering, or even the terrorism (Jeena, 2012).

Curtailing practices of trademark counterfeiting has been a difficult and often frustrating goal (Roediger, 2018). Faced with the global challenges, it is important for each country to endorse effective regulation and enforcement mechanisms to dissuade counterfeiting as well as IP infringements and thus create incentives to invest and engage in legitimate and sustainable businesses that are protecting the natural environment and consumers and boosting the growth (Baldini et al., 2015). Through preliminary assessments of the current legislation and enforcement situation, this paper found on the one hand that judicial decisions could bring into light the difference of legal status between trademark counterfeiting, trademark infringing, and manufacturing and/or trading counterfeit goods as well as the vagueness of the requirements of the crime involving trademark counterfeit goods and on the other hand that despite the recent revision and amendments, the criminal enforcement regime of Vietnam is not an effective deterrent against counterfeiting of goods related to IP infringement, thereby needing to be revisited in a comprehensive way. The author would, on the judicial view, give innovative recommendations in terms of legislation and policy to strengthen the Vietnamese criminal regime in the fight against counterfeit IP goods that could help Vietnam achieve sustainable social-economic development in the long run.

2 Methodology

With the complexity of counterfeiting industry, the criminal legal issues that involve trademark counterfeit goods would vary in complex way for the objective of this article. The methodology employed in the study is comparative research on the basis of historical and international perspective, from which the author finds remarkable changes in the current Criminal Code compared to the previous one as well as the compliance of Vietnamese criminal mechanism with the international framework to a certain extent. However, based on critical analysis of several academic articles and of the figures on the judicial practice with regard to the crime of trademark counterfeiting, loopholes of criminal law would be drawn with the request of innovative and prompt recommendations for more effective enforcement. Finally, case law analysis is applied to show support that the judiciary has been somehow progressive, which should be incorporated into the statutes and the development of new policy.

3 Results

3.1 Confusion of Actus Reus: Counterfeiting or Infringing?[1]

3.1.1 Counterfeiting and Infringing Under Law on Intellectual Property 2005

In Vietnam, there is a classification that distinguishes trademark counterfeit goods from trademark infringing goods; of these, the former is part of the latter (Nguyen, 2014). On the one hand, trademark infringement is defined in Article 129.1 as acts of using signs that are identical with or similar to protected marks without authorization of the mark owners.[2] On the other hand, there is an additional narrower definition of "trademark counterfeit goods" which covers goods or their packages bearing illegally used trademarks which are identical with or cannot be distinguished from protected marks.[3] As such, it is considered that trademark counterfeiting is comprised of acts of using marks that are identical with or indistinguishable from protected genuine marks. In other words, trademark counterfeiting is the highest level of trademark infringement.[4] This has resulted in the fact that not all the acts of infringing upon trademark have the same criminally illegal status.

[1] "Actus reus"means "criminal act." In Vietnamese law, "actus reus" is called "objective aspect of a crime."

[2] Article 129.1 of Law on Intellectual Property 2005 states: "The following acts if being performed without the permission of mark owners, shall be regarded as infringements of the rights to marks: (a) Using signs identical with protected marks for goods or services identical with goods or services on the lists registered together with such marks; (b) Using signs identical with protected marks for goods or services similar or related to those goods on services on the lists registered together with such marks, if such use is likely to cause confusion as to the origin of the goods or services; (c) Using signs similar to protected marks for goods or services identical with, similar to or related to goods or services on the lists registered together with such marks, if such use is likely to cause confusion as to the origin of the goods or services; (d) Using signs identical with, or similar to, well-known marks, or signs in the form of translations or transcriptions of well-known marks for any goods or services, including those non-identical with, dissimilar or unrelated to goods or services on the lists of those bearing well-known marks, if such use is likely to cause confusion as to the origin of the goods or services or misleading impression as to the relationship between users of such signs and well-known mark owners."

[3] Article 213.2 of Law on Intellectual Property 2005 states: "Counterfeit mark goods are goods or their packages bearing marks or signs which are identical with or indistinguishable from marks ... currently protected for those very goods without permission of mark owners ...."

[4] Ha, T.N.T. Strengthening the Legal Framework on the Offense of Infringing upon Industrial Rights to Trademark in Vietnam. In Vietnamese: Hoàn thiện pháp luật về xử lý hành vi xâm phạm quyền sở hữu công nghiệp đối với nhãn hiệu ở Việt Nam. Ph.D Dissertation, Ho Chi Minh Institute of National Politics, 2017, p. 104.

3.1.2 Counterfeiting and Infringing Under Criminal Code 1999 (Amended and Supplemented in 2009)[5]

Under Criminal Code 1999, the offenses of infringing upon industrial rights to trademarks charges are provided in Article 171.[6] As aforementioned in Sect. 3.1.1, acts of counterfeiting trademark are part of trademark infringement acts; therefore, it could be understood that Article 171 involves both trademark counterfeit goods and "other" trademark infringing goods. On the other hand, trademark counterfeit goods are also included in the definition of "counterfeit goods"[7] stipulated in Article 3.8.g of Decree 185/2013/ND-CP.[8] In addition, the offenses of manufacturing and/or trading counterfeit goods charges are regulated in Articles 156, 157, and 158. This has resulted in different opinions on the application of law to prosecute crimes involving trademark counterfeit goods. Some commentators argue that those involving trademark counterfeit goods should be prosecuted and convicted under Articles 156, 157, and 158 and that the offenses of infringing upon industrial rights to trademarks charges regulated in Article 171 are to specifically deal with crimes involving trademark infringement that excludes trademark counterfeiting (Tran, 2007). Other commentators assume that Article 171 applies to both those involving trademark counterfeit goods and those committing other acts of infringing trademark rights (Tran, 2008). In practice, there are several cases in which the court's decisions and reasoning provide a clear illustration of judicial favor of the opinion that acts of trademark counterfeiting would be judged under Article 171.

In **Nguyen T. T v PepsiCo, Inc.**, the forensics conclusion by the Institute of Intellectual Property Science states that the energy drink products that bear signs "STINHP and image" are trademark counterfeit goods under Article 213.2 of Law on Intellectual Property 2005 vis-à-vis the trademark "STING and image" protected under the Certificates of Registered Trademark of PepsiCo, Inc.[9] In **Tran T. K. L v Polo R. L** and **Phung Q. Q v L. I Vietnam Co. Ltd**, the forensics agencies did not conclude whether the infringing goods are trademark counterfeit ones under Article 213.2 of Law on Intellectual Property 2005. Concretely, in the former case, the

[5] Hereinafter referred to as Criminal Code 1999.

[6] Article 171 of Criminal Code 1999 states: "Those who intentionally infringe upon industrial property rights to marks … currently under protection in Vietnam on a commercial scale, shall be imposed a fine of between VND 50,000,000 and VND 500,000,000 or subject to non-custodial reform for up to 2 years."

[7] Article 3.8.g of Decree 185/2013/ND-CP as follows: "Counterfeit goods include: ... (g) Goods have been forged in term of intellectual property rights as provided for by Article 213 of Law on Intellectual Property 2005."

[8] Dated November 15, 2013, providing the penalties on administrative violations in commercial activities, production of and trading in counterfeit or banned goods, and protection of consumer rights.

[9] Regarding the quality of the infringing goods, the forensics conclusion by the Institute of Criminal Science states that their technical parameters reach the quality criteria registered and notified by the H. P Beverage Co., Ltd. whose one of the two co-founders is Nguyen T. T.

Department of Science and Technology of Ho Chi Minh City concluded that the trademark Polo R. L was protected under the International Certificate 1,261,858, referring to be protected in Vietnam for products of clothes of group 25 under the application dated April 22, 2015; Polo R. L asserted that the mark on the seized infringing goods are "identical" with the company's protected mark and the seized goods are counterfeit trademark goods; in the latter, the forensics conclusion by the Institute of Intellectual Property Science states that the sign "L, INAX" on the infringing goods are "identical" with the mark "L, INAX" protected under the Certificate of Registered Trademark 24,690. Despite that, it should, in the author's opinion, be greatly important to take consideration into the characteristics of the trademark infringing goods to decide whether they are trademark counterfeit goods or not, which might give influence on the judicial decision on crime and penalties to the mark infringers. The author assumes that the crime in these cases involves trademark counterfeit goods since the marks on the infringing goods are "identical" with the protected trademarks. Finally, the court in these three cases held that defendants had committed the crime of infringing upon industrial rights to trademark under Article 171 of Criminal Code 1999 even though the infringing goods were concluded or should have been concluded to be trademark counterfeit products, which means that this Article is applied to prosecute those committing other acts of infringing trademark rights per se, but those involving trademark counterfeit goods.

3.1.3 Counterfeiting and Infringing Under Criminal Code 2015 (Amended and Supplemented in 2017)[10]

The Criminal Code of Vietnam was reformed in 2015 and then revised and amended in 2017 with vital changes. Of these, changes pertaining to offense involving trademark counterfeit goods are one of the most remarkable highlights of the reform. Under Criminal Code of Vietnam, the crime of infringing industrial rights to trademark is echoed in Article 226 as follows: "A person who infringes upon industrial property rights of a brand name ... protected in Vietnam, in which the infringing goods are trademark counterfeit goods, for commercial purpose or to earn an illegal profit of from VND 100,000,000 to under VND 300,000,000 or causes a loss of from VND 200,000,000 to under VND 500,000,000 to the owner of such brand name ... or with the violating goods assessed at from VND 200,000,000 to under VND 500,000,000 shall be liable to a fine of from VND 50,000,000 to VND 500,000,000 or face a penalty of up to 03 years' community sentence." This provision clearly states that only "trademark infringement by means of counterfeiting is a crime" (Harms, 2018) under Article 226 of Criminal Code 2015. In other words, Vietnamese law makers excluded "ordinary" trademark infringement from the offense of infringing upon industrial rights to trademarks charges, which is one of the remarkable novelties of Criminal Code 2015 in

[10] Hereinafter referred to as Criminal Code 2015.

comparison with the previous one. However, the title of the article is "offense of infringing upon industrial rights," which has caused confusion in the comprehension of the *actus reus* of the offense. Some commentators still assume that every act of infringing trademark that meets the other requirements stipulated in Article 226.1 would be prosecuted for criminal liability (Le, 2019). Moreover, there remains an issue that Decree 185/2013/ND-CP is still effective till today.[11] This could lead to the argument that those involving trademark counterfeit goods should be prosecuted and convicted under the offense of manufacturing and/or trading counterfeit goods echoed in Articles 192, 193, 194, and 195 of Criminal Code 2015.

3.2 *Overlap of Crime: Counterfeiting or Manufacturing and/or Trading Counterfeit Goods*

As mentioned in Subsect. 3.1.3, the offenses of infringing upon industrial rights charges are specifically to those involving trademark infringement by means of counterfeiting. As such, it seems that they have drawn a remarkable distinction between the legal rules applied to prosecute criminal liability of the counterfeiters of goods who infringe upon industrial rights to trademarks and those applied to counterfeiters manufacturing and/or trading inferior quality goods. In this sense, it would be understood that offenses of manufacturing and/or trading counterfeit goods charges regulated in Articles 192, 193, 194, and 195 of Criminal Code 2015 are used to crimes involving fake and shoddy goods of poor quality that cause health concerns and pose potential safety risks; offenses of infringing upon industrial rights to trademarks charges stipulated in Article 226 of the current Criminal Code are to deal with crimes involving trademark counterfeit goods.

On the other hand, according to Article 3.8 of Decree 185/2013/ND-CP, counterfeit goods include both trademark counterfeit goods and inferior quality goods that pose physical harm or health threats. In many cases, the infringing goods are not only trademark counterfeit goods but also counterfeit goods of poor quality, for example, in the cases where counterfeiter(s) place counterfeit spirits into recycled bottles on which both counterfeit labels and caps (or original recycled caps and genuine labels) are used (Harms, 2018; Matthias & Jiang, 2011). In such cases, trademark counterfeit goods are correlated with both acts of trademark counterfeiting under Article 226 and those of manufacturing and/or trading counterfeit goods of poor quality under Articles 192, 193, and 194. In other words, the crime of trademark counterfeiting overlaps with the crime of manufacturing and/or trading fake and shoddy goods. In this situation, law enforcement agencies have exhibited

[11] September 15, 2019.

an inclination to charge counterfeiters with the latter crime bearing the more severe punishment than the former one[12].

In **Bui T. D v T Co. Ltd**, the forensics conclusions issued by the Intellectual Property Office of Vietnam states that T Co. Ltd. is the owner of the "mark A" and the "mark K" for products of pen and those of rule, respectively; pens of "mark A" and rules of "mark K" manufactured and traded by Bui T. D are trademark counterfeit goods under Article 213.2 of Law on Intellectual Property 2005. Also, the forensics conclusion issued by the Institute of Criminal Science states that the quality parameters of the counterfeit goods are under the registered ranges of pen and rule products provided by T Co. Ltd. Based on these conclusions, both crimes were in theory committed; however, the defendant was initially charged and prosecuted with the crime of manufacturing and trading counterfeit (fake and shoddy) goods. As such, the court ruled in favor of the opinion that the crime of manufacturing and trading counterfeit goods is related not per se to the poor quality of counterfeit goods (fake and shoddy goods) but to the counterfeit mark when the crime is also correlated with acts of trademark counterfeiting. In this sense, the case provides a useful illustration of the issue of overlapping between the crime of manufacturing and/or trading counterfeit goods and the crime of trademark counterfeiting and paves a clear way for the judicial agencies prosecuting and adjudicating counterfeiters in such situation.

Then, the Institute of Criminal Science added a further forensics conclusion that the quality parameters of pen and rule products manufactured and traded by Bui T. D reached a minimum level of 72% and a maximum level of 100% in comparison with the quality criteria registered by the trademarks' owner and that the reached quality of the infringing goods is higher than the standard level of 70% for counterfeit goods provided in Decree 185/2013/ND-CP.[13] After the second forensics conclusion, the procuracy's agency altered the prosecution from the crime of manufacturing and/or trading counterfeit goods under Article 192 to the crime of trademark counterfeiting under Article 226. Finally, the court held that Bui T. D committed the latter crime in lieu of the former one. The judgment represents a clear distinction of law applied to counterfeiters who infringe upon industrial rights to trademarks and those who manufacture and/or trade counterfeit goods of inferior quality.

[12] Comparing the punishments for the two offenses, the maximum punishment for trademark counterfeiting is 3 years' imprisonment plus a maximum fine of up to VND 200,000,000, while those who manufacture and/or trade inferior quality goods with the sales amount equal or exceeding VND 150,000,000 could be punished by at least 5 years' imprisonment.

[13] Article 3.8.b of Decree 185/2013/ND-CP states: "Counterfeit goods include: ... (b) Goods having determined contents of main substances or in nutrients or other basic technical characteristics which have only reached a level of 70% and lower in comparison with the quality criteria or technical standards have been registered or notified to apply or to print on labels or packing of goods."

3.3 Ambiguity of Offense of Infringing Upon Industrial Rights to Trademark

3.3.1 Interpretation of "Commercial Scale"

"Commercial Scale" in International Treaties

"Commercial scale" has been stipulated in many international treaties such as TRIPS (The Agreement on Trade-Related Aspects of Intellectual Property Rights), ACTA (Anti-Counterfeiting Trade Agreement), and CPTPP (Comprehensive and Progressive Agreement for Trans-Pacific Partnership); of these, TRIPS and CPTPP are extremely important to the fight against counterfeit goods related to trademark infringement of Vietnam.

According to Article 61 of TRIPS, members including Vietnam are required to "provide for criminal procedures and penalties to be applied at least in cases of willful trademark counterfeiting . . . on a commercial scale."[14] Under this provision, "commercial scale" requirement is the decisive factor so that the crime of trademark counterfeiting is constituted for giving criminal penalties (Huang, 2017). However, there is not neither further definition nor clear interpretation on "commercial scale," thereby "leaving enough room for flexible interpretations" (Geiger, 2016) in member states. This has resulted in the case where the United States brought against China to WTO Panel for failing to comply with Article 61 of TRIPS by "not providing in its national legislation for criminal penalties against IP infringements on a commercial scale" (Geiger, 2016). In this case, WTO Panel provided a situation-specific interpretation (Ruse-Khan, 2010) by "explaining that 'commercial scale' referred to counterfeiting . . . carried on at the magnitude or extent of typical or usual commercial activity with respect to a given product in a given market" (WTO Panel, 2009; Ruse-Khan, 2010; Geiger, 2016).

Under Article 23 of ACTA, acts carried out on a "commercial scale" are defined as "commercial activities for direct or indirect economic or commercial advantage."[15] Thus, there are two requirements within the concept "commercial scale" that are commercial nature of the acts and the purpose of gaining direct or indirect economic or commercial advantage. In other words, the definition given in Article 23 of ACTA not only broadens the concept of "commercial scale" in a considerable way but also leaves far less room for flexible interpretations than the market- and product-based interpretation held by WTO Panel.

In CPTPP, "commercial scale" is also stipulated as the vital requirement of the crime of trademark counterfeiting and copyright or related rights piracy.[16] However, the Convention provides interpretation for "commercial scale" applied only to

[14] Article 61 of TRIPS.

[15] Article 23 of ACTA.

[16] Article 18.77.1 states: "Each Party shall provide for criminal procedures and penalties to be applied at least in cases of willful trademark counterfeiting or copyright or related rights piracy on a commercial scale . . . ."

copyright and related rights piracy as follows: "In respect of willful copyright or related rights piracy, 'on a commercial scale' includes at least: (a) acts carried out for commercial advantage or financial gain; and (b) significant acts, not carried out for commercial advantage or financial gain, that have a substantial prejudicial impact on the interests of the copyright or related rights holder in relation to the marketplace." This provision brings a broader and higher standard to criminal enforcement of copyright than the ones stated in other international treaties, which could be a good reference for the trademark enforcement.

"Commercial Scale" in Vietnamese Law

"Commercial scale" was incorporated as the only criteria to prosecute the criminal liability of trademark infringers when the Criminal Code 1999 was revised and amended in 2009[17] after Vietnam had become member state of WTO. Then, this has been echoed as one of the standards to prosecute criminal liability of the trademark infringers in Criminal Code 2015.[18] Under Article 226 of Criminal Code 2015, the court would view "commercial scale" requirement as a completely independent requirement that is different from the other three alternatives.[19] However, the concept "commercial scale" has not been so far interpreted in any normative legal document as guidance for judicial offices in the application of law and the resolution of the relevant criminal cases. This has resulted in the reluctance of polices to charge and of prosecutors to prosecute trademark infringers as well as of judges to adjudicate crimes under offense of infringing upon the industrial rights to trademark (Le et al.,2019). From 2010 to June 2019, there have been totally 16 cases adjudicated under Article 171 of Criminal Code 1999 and Article 226 of Criminal Code 2015,[20] which means that the notion "commercial scale" has been to some extent interpreted in different ways in successful cases adjudicated by court.

In **Bui P. D & Tran T. T v Gas Sai Gon & VinaGas & TotalGaz & Shell Gas & other Gas companies**, the court held that the defendants had infringed upon the rights of Gas trademarks for purpose of gaining commercial advantage and that the amount of illegal profit was of VND 92,136,000, thereby committing trademark

[17] Article 171.1 of Penal Code 1999 (revised and amended in 2009) states: "Those who intentionally infringe upon industrial property rights to marks … currently under protection in Vietnam on a commercial scale, shall be imposed a fine of between VND 50,000,000 and VND 500,000,000 or subject to non-custodial reform for up to 2 years."

[18] Article 226.1 of Penal Code 2015 states: "A person who infringes upon industrial property rights of a brand name . . . protected in Vietnam, in which the infringing goods are trademark counterfeit goods, for commercial purpose or to earn an illegal profit of from VND 100,000,000 to under VND 300,000,000 or causes a loss of from VND 200,000,000 to under VND 500,000,000 to the owner of such brand name . . . or with the violating goods assessed at from VND 200,000,000 to under VND 500,000,000 shall be liable to a fine of from VND 50,000,000 to VND 500,000,000 or face a penalty of up to 03 years' community sentence."

[19] The other alternative requirements of the trademark infringement crime are illegal profit, damages, and value of infringing goods.

[20] The author has counted the cases based on the statistics of Supreme People's Procuracy of Vietnam and cases given by inferior procuracies and courts.

infringement crime. In this case, the amount of illegal profit that the defendants have gained is lower than the one regulated in Article 226.1 of Criminal Code 2015[21]. Also, the Criminal Code 2015 did not come into force[22] at the time when the defendants performed the infringing trademark acts; it should be considered that the gained commercial advantage in the court's interpretation of the concept "commercial scale" is totally independent from the illegally gained profit stated as one of the thresholds to prosecute criminal liability of trademark infringers in Article 226.1 of Criminal Code 2015. As such, the court defined acts carried out on a "commercial scale" as "commercial activities for commercial advantage" that is the approach adopted in ACTA.

In **Dinh T. K. C & Tran Q. D v Lacoste – Crocodile & Louis Vuitton & Valentino & Levi's & Gucci & Polo & Hermes**, **Nguyen T. T. P v Levi Strauss & Co.**, **Tran T. K. L v Polo R. L**, **Phung Q. Q v L. I Vietnam Co. Ltd**, and **Nguyen T. T v PepsiCo, Inc.**, the court held the same way that the total values of the trademark infringing goods were of VND 1,300,540,000, VND 32,770,566,000, VND 651,000,000, VND 159,565,000, and VND 155,000,000, respectively, thereby concluding that the defendants' acts had been carried out on a "commercial scale" for commercial advantage and committed trademark infringement crime under Article 171 of Criminal Code 1999. On the one hand, the value of trademark infringing goods was included into the notion "commercial scale" in these five cases. On the other hand, the value of trademark infringing goods was incorporated as one of the elements of the crime of trademark infringement under Article 226.1 of Criminal Code 2015. Concretely, those who infringe upon the rights of a trademark protected in Vietnam with the infringing goods assessed at from VND 200,000,000 to under VND 500,000,000 shall be responsible for criminal liability. In the two final cases, the values of trademark infringing goods reached VND 159,565,000 and VND 155,000,000 that are lower than the minimum standard amount stipulated in Article 226.1. Also, the Criminal Code 2015 had not come into force at the time when the defendants performed the acts of infringing industrial rights to the protected trademark; it can be therefore clearly understood that the value of trademark infringing goods in the court's interpretation of "commercial scale" is totally independent from that provided as one of the requirements to prosecute criminal liability of trademark counterfeiters in Article 226.1. This interpretation with the focus on "the value of trademark infringing goods" is in compliance with the threshold of "commercial scale" on the basis of commercial activity as well as products and markets regulated in TRIPS.

[21] Article 226.1 stipulates that "a person who infringes upon industrial property rights of a brand name . . . to earn an illegal profit of from VND 100,000,000 to under VND 300,000,000 . . . shall be liable to criminal liability."

[22] Criminal Code 2015 came into force on January 1, 2018.

3.3.2 Calculation of "Damages"

"Damages" have become one of the elements of the trademark infringement crime since the Criminal Code 2015 came into force. According to Article 226.1 of the Code, those who counterfeit trademark protected in Vietnam causing a loss of from VND 200,000,000 to under VND 500,000,000 to the owner of such mark shall be responsible for criminal liability. However, there has been so far no normative legal document or judicial guidance to clarify how to calculate "damages" to make it more applicable in criminal practice. It is therefore greatly difficult to take criminal action for trademark infringement based on the threshold of "damages" (Le et al., 2019).

In **Nguyen T. T. P v Levi Strauss & Co.**, Levi Strauss & Co. submitted a request for civil compensation with spiritual damages being VND 20,000,000 for loss of prestige in business, costs of hiring attorneys of VND 106,893,272, and material damages of VND 490,000,000 due to loss of revenue caused by trademark counterfeit goods. After the judicial examination, the court ordered Nguyen T. T. P to pay Levi Strauss & Co. for spiritual damages and costs of hiring attorneys. For the request for material damages, the court ruled that the claimed compensation was unacceptable since the trademark counterfeit goods had not been traded in the market of Vietnam as well as exported to any foreign country. From this case, the author would pose two questions on what constitutes "damages" when they function as one of the prerequisites for commencing criminal action for trademark infringement that are (1) whether civil compensation for damages brought by trademark infringement in criminal cases[23] is the same with damages as a requirement of the crime involving trademark counterfeit goods under Article 226 of Criminal Code 2015 and (2) whether costs of hiring attorneys are included in damages under this Article. The author assumes that it would be extremely necessary to issue clear judicial guidance on what constitutes damages as a threshold for taking criminal action for trademark infringement.

3.3.3 Calculation of "Value of Infringing Goods"

Value of infringing goods was also incorporated into Criminal Code 2015 as a standard of the crime of trademark infringement. However, there has been no clear judicial guidance on how to calculate the value of the infringing goods in criminal cases, which has resulted in different opinions on this issue. On the one hand, some commentators argue that the value of the infringing goods should be determined on the basis of market price of the infringing goods at the time of the trademark

[23] Civil compensation for damages caused by trademark infringement in criminal case is determined under Article 205 of Law on Intellectual Property 2005 amended by Article 2.11 of Law No. 42/2019/QH14 on the amendments of Law on Insurance Business and Law on Intellectual Property.

infringement act because of the word "infringing goods"[24] stated in Article 226.1 of Criminal Code 2015. On the other hand, many other commentators assume that it should be valued based on the market price of the genuine goods whose mark is infringed at the time of trademark infringement. The author agrees with the second opinion that the price of the genuine goods should be the basis for determining the value of the infringing goods.

In **Bui T. D v T Co. Ltd** and **Tran T. K. L v Polo R. L**, the court held that the values of the trademark infringing goods determined on the basis of market price were of VND 2,203,468,000 and VND 651,000,000, respectively. However, it is not clear whether the values in both cases were calculated based on the market price of the infringing goods or the genuine goods whose mark was infringed. It seems that **Nguyen T. T. P v Levi Strauss & Co.** has shed more light on how to determine the value of the trademark infringing goods. In this case, the market price of the genuine goods was used in the determination of the value of the trademark infringing goods. Concretely, the court determined the value based on the actual selling price of the genuine goods provided by the Fashion Shop of Thanh Bac Fashion Co. Ltd. that was situated in Diamond Plaza, Ho Chi Minh City. As such, the court ruled in favor of the opinion that the value of the infringing goods should be calculated on the basis of the price of the genuine goods, not infringing goods as stated in Article 226.1.

Another issue related to the determination of the value of the trademark infringing goods is whether it should be calculated on the listed prices or the actual selling prices or other prices and their priority order. Article 1.6 of Decree No. 119/2010/ND-CP[25] states: "The value of infringing goods shall be determined by the infringement-handling agency at the time of occurrence of the infringement and based on the grounds which are arranged in the following priority order: (a) The quoted price of the infringing goods; (b) The actual selling price of the infringing goods; (c) The cost of the infringing goods (if not yet put into circulation); (d) The import price of the infringing goods."[26] However, these provisions are applied in the form of administrative remedies, not to criminal liability.[27] In **Nguyen T. T. P v Levi Strauss & Co.**, the value of the trademark infringing goods reaches VND 36,432,000,000 when being determined on the basis of the price given by Levi Strauss & Co. to sell products in Vietnam and VND 32,770,566,000 when being calculated with the actual selling price in the market. On the other hand, the listed price of the goods was not mentioned in this case. Finally, the court gave the final decision on the crime based on the value determined with the actual selling price of the goods. The author totally agrees with the court's opinion and assumes that

[24] In Vietnamese, "hàng hoá vi phạm".

[25] Decree No. 119/2010/ND-CP dated December 30, 2010, to amend and supplement a number of articles of the Government's Decree No. 105/2006/ND-CP of September 22, 2006, detailing and guiding a number of articles of the Law on Intellectual Property regarding protection of intellectual property rights and state management of intellectual property.

[26] This article is correlated with Article 28 of Decree No. 105/2006/ND-CP.

[27] Article 1.6 of Decree No. 119/2010/ND-CP (Article 28 of Decree No. 105/2006/ND-CP) is stipulated in the chapter on handling of infringements by administrative measures.

Nguyen T. T. P v Levi Strauss & Co. should be shown as a good model case for the application of law and the development of clear judicial guidance on this issue.

4 Discussion and Recommendations

4.1 Clear Distinction Between Trademark Counterfeiting and Trademark Infringing

Under Article 226 of Criminal Code 2015, it is understood that the offenses of infringing upon industrial rights to trademark are to specifically deal with those involving trademark counterfeit goods. However, the title "offense of infringing upon industrial rights" of the article has caused confusion in the comprehension of the objective aspect of the offense. To avoid further confusion in the application of law, the author assumes that the title of Article 226 should be altered into "offense of trademark and geographical indication[28] counterfeiting."

4.2 Clear Distinction Between Trademark Counterfeiting and Manufacturing and/or Trading Counterfeit Goods

To avoid the inconsistency in the application of law in the case where the crime of trademark counterfeiting overlaps the crime of manufacturing and/or trading counterfeit goods, the author would offer two recommendations. First, "trademark counterfeit goods" should be omitted from the definition of "counterfeit goods" stipulated in Article 3.8 of Decree 185/2013/ND-CP. The Ministry of Industry and Trade of Vietnam has recently given draft versions of the Decree providing the penalties on administrative violations in commercial activities, production of and trading in counterfeit or banned goods, and protection of consumer rights to replace the Decree 185/2013/ND-CP and the Decree 124/2015/ND-CP,[29] in which "trademark counterfeit goods" are divorced from "counterfeit goods." The author totally with this omission, however, asserts that the new Decree should be enacted and introduced in a very short time in order to achieve the maximum possible effectiveness in the combat against trademark counterfeit goods. Also, the author recommends to provide a clear judicial guidance that where the crimes of both trademark counterfeiting

[28] Article 226 of Criminal Code 2015 governs criminal acts of counterfeiting both trademark and geographical indication. However, in this legal analysis, the author focuses on trademark counterfeiting per se.

[29] Draft version 3 in Vietnamese is available at http://vibonline.com.vn/du_thao/du-thao-nghi-dinh-ve-xu-phat-vi-pham-hanh-chinh-trong-hoat-dong-thuong-mai-san-xuat-buon-ban-hang-gia-hang-cam-va-bao-ve-quyen-loi-nguoi-tieu-dung. Accessed on September 15, 2019.

and manufacturing and/or trading counterfeit goods are committed, the defendant (s) should, pursuant to the "theory of concurrency" in criminal law, be charged with the latter crime with the more severe penalties. In such situation, the act of trademark counterfeiting should be also taken into consideration when deciding the penalties in order to assure the highest protection of rights of both consumers and mark's owners.

4.3 Clear Interpretation of "Commercial Scale"

The author recommends that a clear judicial guidance should be provided on how to interpret the requirement of "commercial scale" as a vital factor of the crime involving trademark counterfeit goods. The interpretation of the concept would be built on the basis of case law as analyzed in Subsection 3.3.1. Since the threshold of "commercial scale" is totally independent from the other ones and its interpretation represented in case law is correlated with "gained profit" and "value of infringing goods," the author recommends that when building necessary guidance, the Vietnamese law makers should take into account the fact that "commercial scale" refers to acts of counterfeiting carried out as commercial activities for commercial advantage or financial gain which could be proven by a magnitude or an extent of "gained profit" or "value of infringing goods" with a market-product-driven approach. The amount of "gained profit" and "value of infringing goods" explained in "commercial scale" could be under the minimum requirements stipulated in Article 226.1 of Criminal Code 2015.[30]

4.4 Clear Interpretation of How to Calculate "Damages" and "Value of Infringing Goods"

Of the three other requirements of the offense of trademark counterfeiting under Article 226 of Criminal Code 2015, "damages" and "value of infringing goods" remain vague, thereby needing to be clarified so that they could be applied with effectiveness. The author recommends that a clear judicial guidance on how to calculate "damages" and "value of infringing goods" should necessarily be provided. Based on the cases analyzed in Subsection 3.3.2 and Subsection 3.3.3, two recommendations on these issues would be proposed. First, damages brought by trademark infringement in criminal cases could be determined on the legal basis to calculate compensation in civil cases. In criminal cases, it is not the owner's mark(s) but the prosecutors along with polices and judges who have to prove damages based on the information provided by the owner's mark(s). Also, damages shall be actual and

[30] Under Article 226.1 of Criminal Code 2015, the minimum standard for "illegally gained profit" is of VND 100,000,000 and for "value of infringing goods" is of VND 200,000,000.

direct losses of the owner's marks, and there must be a causal link between the act (s) of trademark counterfeiting and the losses; therefore, costs of hiring attorneys should not be included in damages as an element of the crime but could still be compensated in the civil perspective in criminal cases. Regarding "value of infringing goods," the author recommends that it should be determined on the basis of the market price of the genuine goods whose mark is infringed at the time of trademark infringement. The market price in criminal cases could be also determined based on the standards stipulated in Article 1.6 of Decree No. 119/2010/ND-CP.[31]

4.5 Enhancing the Cooperation of Enforcement Agencies in the Fight Against Counterfeit IP Goods

The author recommends continued and expanded collaboration between the criminal enforcement agencies including the procuracy, the court, and the police. These agencies play a vital role in building and introducing clear judicial guidance on the aforementioned issues as well as in training prosecutors, judges, and polices to apply the law in a consistent way and increase the likelihood of successful prosecutions (Kammel et al., 2019). Moreover, it is also extremely important to further improve the sound cooperation and coordination between these three agencies and other law enforcement authorities such as the Inspectorate of Ministry of Science and Technology, the Market Surveillance Agency of Ministry of Industry and Trade, the General Department of Customs of Ministry of Finance, and the National Office of Intellectual Property under Ministry of Science and Technology as well. Also, better and more effective actions should be integrated in the inter-agency strategies to combat trademark counterfeit goods (ICC BASCAP, 2019).

4.6 Training Prosecutors and Judges in IP Law

The previous cases have shown that the prosecutions and convictions are always dependent on forensics conclusions of the IP-specialized agencies and even other agencies. The Institute of Intellectual Property Science and the National Office of Intellectual Property are regularly consulted on criminal cases of IP infringement in general and those involving trademark counterfeit goods in proper. Furthermore, the Institute of Criminal Science and the Department of Science and Technology could be consulted on these cases. This could make the investigation process take so long, which is the rationale for providing more training for prosecutors and judges on IP law. Especially, Article 226 of Criminal Code 2015 requires an exact conclusion on whether the trademark infringing act is performed by means of counterfeiting or not.

[31] See Subsect. 3.3.3 of the paper.

In other words, prosecutors and judges must be trained in order to enhance their capacity in examining whether the act of trademark infringing involves trademark counterfeit goods in order to increase the likelihood of successful prosecution and conviction.

5 Conclusion

Overall, with the harmful threats of trademark counterfeiting to the economy, the environment, and the human beings, the crime(s) involving trademark counterfeit goods cut at the very fabric of society,[32] thereby needing to be hampered by a strong deterrent with an effective criminal enforcement mechanism. The paper provides a necessary overview of loopholes of criminal law as well as achieved remarkable highlights of case law in the fight against trademark counterfeiting. To enhance the anti-counterfeiting efforts in the national scale, the author proposes several innovative recommendations, including bringing a clear distinction between trademark counterfeiting and trademark infringing in criminal cases, providing clear judicial guidance on the case of overlapping between the crime of trademark counterfeiting and the crime of manufacturing and/or trading counterfeit goods and clear guidance on ambiguous standards on the crime of trademark counterfeiting, enhancing the cooperation and coordination of law enforcement agencies, and training for prosecutors and judges. By adopting these recommendations, the country would be better positioned to mitigate harmful, even deadly, effects of trademark counterfeiting crime to the economy, the environment, and the human beings and to ultimately target to achieve sustainable social-economic development as well.

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Chapter 8
Vietnam and "Non-market Economy" in the US Anti-dumping Law

Lan Anh Le

Abstract "Non-market economy" is a concept given in GATT 1947. In the United States, the anti-dumping (AD) law also has been applied to those imported goods that come from non-market or "transitional" economies. As a member of the WTO is considered to be a non-market economy, Vietnam has met many difficulties in exporting goods to the US market by this legal barrier in the US anti-dumping law. The paper examines the evolution of non-market economy regulation in the US anti-dumping legislation and assesses the impact of this regulation on Vietnamese exports. The study results indicate that the prospect of Vietnam is recognized a market economy by the United States.

Keywords Non-market economy · US anti-dumping · Vietnam · Regulations · Policies

1 Introduction

"Non-market economy" is a concept given in GATT 1947. In the United States, the anti-dumping (AD) law also has been applied to those imported goods that come from non-market or "transitional" economies. As a member considered a non-market economy of the WTO (World Trade Organization), Vietnam has met many difficulties in exporting goods to the US market by this legal barrier, especially under US anti-dumping law. This makes the Vietnamese defendants face much more disadvantage than other countries considered market economies. So, if Vietnam is recognized as a market economy, it will be a great advantage for the development of Vietnam's export goods. Currently, besides the great achievements of the Vietnam-US relationship in general, Vietnam's economy is also positively changing

L. A. Le (✉)
VASS Institute of Americas Studies, Hanoi, Vietnam

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toward a socialist-oriented market economy, and efforts fully meet the criteria that Vietnam has a market economy.

This paper analyzes the origins, emergence, and development of the idea of "non-market economy" in US anti-dumping law. This historical discussion focuses primarily on US relation with Central and Eastern Europe and the Soviet Union. This paper concentrates principally on the development of legal ideas as well as implementation in practice specifically in the case of Vietnam.

2 Results

2.1 The Origin of a "Non-market Economy" Notion

The concept of non-market economy originates from an annotation in Article VI of GATT 1947. However, this concept is not clearly defined; instead, WTO members will define a non-market economy in their own way based on WTO. The United States, the EU and some other member states have their own regulations on how to determine whether a market economy or non-market economy in anti-dumping investigation. Since Vietnam previously pursued a centralized subsidized economy model, when negotiating to join the WTO, at the request of some members, especially the United States, Vietnam must accept the commitment that the country would transform into a non-market economy within 12 years (until the end of December 31, 2018).

There were reasons for the United States to put some countries, Vietnam among them, into the list of countries with non-market economies. During the period of between World War I and World War II was marked by the explosion of dumping trade from a number of former Soviet Union countries. However, it seems that few anti-dumping cases are brought to trial under the US 1921 Anti-dumping Law during this period. Because of the strong development of the US economy along with an average tariff, the anti-dumping policy was not an important component of US trade policy in the 1920s and 1930s, as well as in the period immediately after World War II (Irwin, 2005a, 2005b). The hight of average tariff between the 1920s and early 1930s and some of signed trade agreements under the Reciprocal Trade Agreement Act of 1934, protected the US domestic producers from foreign competition without using anti-dumping laws. For example, Section 337 of the 1930 Tariff Act authorized the Tariff Commission to investigate unfair competition practices involving imports when the impact or trend of such methods or behaviors is to destroy or cause significant injure to the domestic industry or to prevent the establishment of an industry, or to restrain or monopolize the trade and commerce of the United States. Section 336 of the 1930 Tariff Act – the so-called flexible tariff provision – provides a procedure whereby import duties can be changed by presidential claims after an investigation and report by the Commission on the difference between the cost of production in the United States and its major foreign suppliers. In addition, Section 22 of the Agricultural Adjustment Act authorizes the president to restrict

imports of a commodity that render ineffective or interfere materially with US agricultural programs (notably price support)[1]. Therefore, although there had been some cases of dumping, it has not caused a great impact on the US economy. Moreover, in this period in terms of administrative management, the determination of imported goods is sold at a price lower than the normal value, and whether it damages the domestic industry or not belongs to the US Finance Ministry's responsibility. However, the determination of damage caused by dumping is entirely outside the scope of the Ministry of Finance's jurisdiction. Indeed, although there were complaints about the dumping case but not handled or handled incompletely by the Ministry of Finance.

However, increasing trade exchanges between the Western and Eastern European countries under the Stalinist Soviet economic model in the 1950s and 1960s had influenced on the US industry and could disrupt fair trade competition in these trade relations. Therefore, the United States had developed a regulation to address dumping allegations because it had found that traditional treatment methods were no longer appropriate to measure price discrimination. Since then, the "non-market economy" regulation has been included in the Omnibus Trade and Competition Act of 1988 (OTCA)[2].

2.2 *Treatment of a "Non-market Economy" Under US Anti-dumping Law*

The US anti-dumping (AD) law considers dumping to occur when a foreign manufacturer charges a price for its product "less than its fair market value"[3]. For dumping from non-market economies, the Department of Commerce (DOC) uses a standard method to determine the fair value of products. First of all, normal values are the basic criteria for DOC to compare the prices of products in the domestic market with the price of the US products to decide whether a foreign manufacturer's products have been sold in the United States. After investigation, the DOC will determine whether the dumping has occurred. If dumping occurs, the DOC will set the dumping margin by calculating the average amount that the market value of the

[1] An act to amend Section 22 of the Agricultural Adjustment Act.

[2] Defines "non-market economy country" to mean any country that the administering authority determines does not operate on market principles of cost or pricing structures.

[3] Selling at less than fair value, or dumping, is defined in Section 771(34) of the Act (19 U.S.C. §1677(34)) as "the sale or likely sale of goods at less than fair value." Dumping is defined as selling a product in the United States at a price which is lower than the price for which it is sold in the home market (the "normal value"), after adjustments for differences in the merchandise, quantities purchased, and circumstances of sale. In the absence of sufficient home market sales, the price for which the product is sold in a surrogate "third country" may be used. Finally, in the absence of sufficient home market and third country sales, "constructed value," which uses a cost-plus-profit approach to arrive at normal value, may be used.

product exceeds the normal price sold in the United States under section 1673b(b)(1)(A) at 19 US Code.

The standard method applied to non-market economies (NMEs) described above has problems because non-market economies do not allocate resources according to the traditional market concept of supply and the demand, thereby making decisions about fair value almost impossible (Tatelman 2007). In the 1960s, the US Department of Finance was responsible for domestic trade defense laws and, began to use the so-called "surrogate country" approach to apply AD law to NME countries. According to this approach, it was possible to compare prices and costs from third countries with similar conditions that were used instead of NME countries to determine fair market value. This approach was adopted by the Congress in the Trade Act 1974. In principle, the selected third country must be an economy with similar economic conditions to the exporting country, that means have the same level of economic development as a non-market economy of the exporting country. However, this "surrogate country" method sometimes was difficult to apply because it's not always possible to find the suitable country to replace. Therefore, it was necessary to come up with another solution that could be more effective.

The Department of Commerce had found out a way to solve concerns about the surrogate nation's approach by adopting a new methodology in 1975. This methodology was known as the "factors of production" approach. Accordingly, in case of the absence of an available surrogate country, the DOC would base on the "surrogate country" taken from a non-market economy that was considered to be at the period of having equivalent economic development to the country whose products were under investigation for dumping (Lantz, 1995a, 1995b).

The US AD provisions continued to amend in 1988 to deal with non-market economy issue. The Omnibus Trade and Competitiveness Act of 1988 defined a non-market economy: "does not operate on market principles of cost or pricing structures, so that sales of merchandise in such country do not reflect the fair value of the merchandise". This Act also set standards for the DOC to determine ME or NME status of an economy.

Under Section 1677 (18)(B) at 19 US Code, the DOC must consider when making decisions regarding the state of a non-market economy basing on the following factors:

1. The extent to which the currency of the foreign country is convertible into the currency of other countries
2. The extent to which wage rates in the foreign country are determined by free bargaining between labor and management
3. The extent to which joint ventures or other investments by firms of other foreign countries are permitted in the foreign country
4. The extent of government ownership or control of the means of production
5. The extent of government control over the allocation of resources and over the price and output decisions of enterprises
6. Other factors that the investigating authority considers reasonable

For the first criterion, in terms of the convertibility of the local currency, the factors to be assessed include the ability to convert current and capital accounts, exchange rates, and foreign exchange policy trends.

For the second criterion, wages must be determined based on a market price, where workers and employers are free to agree on terms and conditions of employment contract. When investigating this criterion, the US Department of Commerce will take into account factors of the right of workers to join a union, the independence of union, the ability to develop a self-payment regime of the union, etc.

For the third criterion, regarding the rights of foreign investors, several factors can be considered such as the openness of the investment environment, the non-discrimination between domestic and foreign investors, and the regulations on profit remittance.

For the fourth criterion, the degree of ownership or control by the government of the means of production, this is a very important criterion for the United States to determine a market economy. Factors related to this criterion include the capitalization issue of state-owned enterprises, the proportion of economic sectors in the economy, and the role and extent of the State's intervention in economic activities. The fourth criterion is also related to the government's participation in the economy, which is the level of government's control over the allocation of resources and the determination of prices and output of enterprises. This criterion is associated with the following factors: the price liberalization, the reform of banking sector, and the freedom of individuals and businesses to participate in business activities.

Besides, the US Department of Commerce may also investigate a number of other issues such as compliance with the provisions of the antitrust law, anti-dumping law, etc. Moreover, the DOC has an authority not only to determine, but also revoke the determination of a NME status may be made with respect to any foreign country at any time.[4]

In addition, the Trade Agreements Act of 1979 also transferred administrative authority from the Department of the Treasury to the DOC to determine which approach would be used when determining fair market value. According to the DOC, the market value should be determined according to the value of elements in the following order of priority: (1) the home market prices of such or similar merchandise in a surrogate country; (2) the export price of such or similar merchandise shipped from a surrogate country; (3) when actual or accurate prices are not available, the constructed value of such or similar merchandise in a surrogate country; and (4) the value in a surrogate country of the factors of production used in the non-market economy for such or similar merchandise Todd (2007).

Actually, the US anti-dumping laws treat MEs and NMEs very differently (Horne, 2001). In specific anti-dumping cases applicable to an exporter from an NME, the DOC will decide dumping by comparing prices in two markets. The DOC compares the import price with the price of similar goods in the market of the export country. If this comparison is not possible because of having no trade in the same

[4] 19 U.S.C. § 1677(18)(C) (2000).

goods in the domestic market of the exporter, the DOC will compare the price of imported goods with the value of construction or price of similar goods sold in third countries. If the price of goods imported into the United States is lower than the comparable price, dumping occurs, and if the International Trade of Commission (ITC) finds a risk of damaging the US domestic industry, anti-dumping measures will be applied to offset differences and protect US manufacturers. However, if a country is considered an NME, the US law considers that the prices and production costs of such goods are unreliable. Depending on the adequacy of the available information, the DOC may determine the normal value of the product to be investigated based on the price of similar goods in the imported country, or the DOC may determine the value of products. DOC can replace the price of an ME with the same level of development for NME. This is often called the "alternative methodology" (Rana, 2008). The use of different methods for MEs and NMEs is widely criticized for a number of reasons.

Firstly, in fact, it is not fair to distinguish between market and non-market economies for the purposes of anti-dumping regulations: the difference among the methods used to calculate possibly dumping margins preventing NME exporters from exporting goods to the US market because of high dumping tariffs.

Secondly, the regulations regarding the NMEs are ambiguous, and sometimes they make difficulties in implementation of the anti-dumping authorities. The determination of MEs or NMEs largely depends on the interpretation of the DOC.

Thirdly, the determination of an alternative country is complex and almost never accurate because ME and NME concepts are fundamentally different. Although the concept of an alternative country seems reasonable, in fact, the alternative countries and the export countries often do not compare each other thoroughly. Therefore, it is impossible to determine an accurate replacement price for anti-dumping investigations.

Fourthly, the "alternative nation" approach is completely unpredictable. For a producer, the calculating price method is unpredictable: there is no level for NME producers to calculate export prices to avoid dumping. Moreover, producers of similar goods in the alternative country often compete with producers and exporters in the export country. Therefore, producers and exporters in the alternative country are often dissatisfied with providing relevant data for anti-dumping investigations, or they may provide unfavorable information for NME exporters.

2.3 Vietnam's Status as a Non-market Economy

Vietnam joined the World Trade Organization (WTO) in 2007 and accepted a 12-year term for non-market economy status from the date of accession, and the NME provision would expire on December 31, 2018. Accordingly, Vietnam agreed to allow other WTO members to continue to use an alternative (surrogate country) methodology for assessing prices and costs on products subject to anti-dumping (AD) measures. Vietnam was considered to be a NME because other WTO members

argued that distortions in the Vietnam economy caused by government intervention would make it impractical in many cases to use Vietnam prices and costs for determining dumping margins. From 2007 to 2018, Vietnam has been recognized by 69 other countries in the world as a market economy country. However, two largest and most important partners, the United States and the EU, have not yet approved it. They argue that the WTO language did not automatically obligate them to extend market economy status (MES) to Vietnam. The reason that they give is Vietnam has not yet fully met the conditions of a market economy.

If the United States recognizes Vietnam as a market economy, this will help Vietnam avoid the disadvantages of facing anti-dumping and anti-subsidy lawsuits. In many cases, Vietnam's exports are subject to very high anti-dumping duties from investigating bodies of countries using the costs and figures of the replacement country, especially in cases of anti-dumping of the US government. At the same time, regulations on non-market economies also increase the risk of double taxation for Vietnamese exporters.

2.4 Impacts of "Non-market Economy" on Vietnam Exports

The first anti-dumping investigation of the US against of Vietnamese seafood exporters was initiated in 2002 on frozen Tra and Basa fillets and 2003 on frozen warmwater shrimp, so far they are still the subjects being used by the United States. In 2017, the DOC decided to extend anti-dumping duties on frozen shrimp imports from Vietnam for another 5 years. Moreover, on March 9, 2018, the DOC applied anti-dumping tax 25.39% for Vietnamese shrimp in the administrative review of the anti-dumping duty order on Vietnamese shrimp for the period of review (POR) 2016–2017. It was a rather high tax rate that Vietnamese shrimp exported to the United States suffered. This tax was part of the reason that the import turnover into the US market has decreased significantly in recent years. Consequently, Vietnamese shrimp exported to the United States has dropped sharply from the no. 1 in 2016 to the fourth position among the top export markets of Vietnamese shrimp. In addition to the exported seafood, on April 4, 2018, in the *FACT SHEET: Commerce Finds Dumping of Imports of Tool Chests and Cabinets from China and Vietnam*, the DOC announced the final determinations in the anti-dumping duty investigations of imports of tool chests and cabinets from China and Vietnam. In the Vietnam investigation, because of several adverse facts available, all producers/exporters in Vietnam that are not eligible for a separate rate, including the Clearwater Metal Single Entity, received the dumping margins at 327.17% (China was at 244.29%).

In March 2018, the DOC issued the final decision of anti-dumping duty on frozen tra and basa fillets on the 13th period of review (from August 1, 2015 to January 31, 2016) was 1.6 times higher than the anti-dumping duty in the preliminary decision in September 2017, and was 4.9 times higher than the private tax rate on the 12th period of review the US Food Safety Inspection Agency began conducting a practical inspection of Vietnam's catfish control program (Nguyen, 2018). In the first

9 months of 2017, Vietnam's tra and basa fish exports to the United States decreased by 9.9% compared to the first 9 months of 2016 and continued to decrease in the last months of the year (Luu & Vu, 2018). With the United States imposing high anti-dumping duties on these products, the export of catfish from Vietnamese enterprises to the US market is becoming more and more difficult.

These are just some of the US anti-dumping cases against Vietnamese exports. Recently with the new tax reform policy of President D. Trump's Government, Vietnam is also at risk of being indirectly affected when the United States focuses on taxing Chinese goods, while many Vietnam's export products have raw materials originating from China. Vietnam in general is in charge of processing and finishing the final products in the production chain. Vietnam must import raw materials from Chinese manufacturing factories, processing the last labor-intensive steps before exporting to the world's largest consumer market, the United States. Therefore, when the United States and China confront trade, it will have a certain influence on outsourced economies with intermediate positions such as Vietnam. At the end of 2017, the United States continued to announce that they would apply anti-dumping and anti-subsidy duties on galvanized steel and cold rolled steel products from imported corrosion-resistant steel and cold rolled steel made in Vietnam using Chinese materials. Accordingly, the United States will apply anti-dumping and anti-subsidy duties of 199.76% and 256.44%, respectively, from imported corrosion-resistant steel and cold rolled steel made in Vietnam using Chinese materials. In addition, Commerce instructed Customs and Border Protection (CBP) to continue collecting AD and CVD cash deposits on imports of CORE produced in Vietnam using Chinese-origin substrate at 199.43% and 39.05%, respectively. The AD and CVD cash deposits on imports of cold rolled steel produced in Vietnam using Chinese materials are 199.76% and 256.44%, respectively (Reuter 2018).

In order to minimize the negative impacts of the new US trade protection policy, Vietnam needs to be more proactive in responding to US protectionist policies in the face of growing trade protectionism. Besides, Vietnam needs to ensure strictly the origin of products from the raw materials to production stage. It is necessary to be more proactive approach the changes of the curent US trade policies to prevent unexpected damage in trade relations with the United States.

2.5 How Can Vietnam Achieve MES Under US Law?

Currently, the US Department of Commerce labels 11 countries as NMEs: Belarus, Georgia, the Kyrgyz Republic, China, the Republic of Armenia, the Republic of Azerbaijan, the Republic of Moldova, the Republic of Tajikistan, the Republic of Uzbekistan, Vietnam, and Turkmenistan. In the past, some countries designated as NMEs were then converted to market economies (MEs), such as Poland (1993), Russia (2002), and Ukraine (2006) (Griswold (2019). In order to be revoked from an NME status, the government of that country must go through a complicated process by making a formal request for review or back a claim by a respondent in a US AD

investigation to prove that they are eligible to be considered as a ME country. However, the DOC could declare that certain industries are operating under market conditions while continuing to apply the NME methodology to other sectors.

China is an example of claiming the non-market economy status on WTO. According to *China's 2001 Protocol of Accession*, WTO members were required to end their use of NME methodologies to calculate AD margins on imports from China after 15 years (December 11, 2016), but it had not happened. To protect the right of international trade freedom, China initiated a proceeding within the framework of the WTO, which required a review of trade disputes against the United States and the European Union for not recognizing China as a market economy. Finally, the DOC conducted a review of China's status in October 2017. However, the result of the review concluded that China was still a NME because "the state's role in the economy and its relationship with markets and the private sector results in fundamental distortions in the Chinese economy" (Morrison, 2019). The DOC determined that it still could not rely on Chinese prices and costs for the purposes of its anti-dumping analysis (Washington, 2018a, 2018b).

Vietnam is also increasing efforts to be recognized as a market economy by the United States. Under WTO commitments, Vietnam would only be considered a non-market economy in anti-dumping investigations until December 31, 2018. If the countries followed their promises, after 2018, Vietnam would be treated as all other exporting countries in investigations, and the calculations for Vietnam's exports will be based on WTO standards. If it implemented, it could create a change in the results of the investigations, the calculated results would be done equally to other market economies. However, the deadline of a 12-year term for non-market economy status is expired, and Vietnam has still not been considered a market economy by the United States. According to the United States, although the Vietnamese government does not regulate commodity prices, it still maintains some formal and informal controls on the economy. From the above issues, it can be concluded that the deadline of a 12-year term for non-market economy status is expired does not mean that Vietnam will be automatically considered a market economy by all WTO members.

In order to meet the US criteria, Vietnam may have to yield concessions in some areas, which helps Vietnam avoid negative impacts on exporting enterprises and the damage caused by anti-dumping and anti-subsidy lawsuits by the United States. In the context that the United States is putting pressure on the issue of goods trade deficit with Vietnam and the negotiations to achieve a bilateral investment agreement between the two countries continue to be delayed, the US proposal recognizing Vietnam as a market economy seems to be very difficult.

3 Conclusions

Due to NMEs, many Vietnamese enterprises have been disadvantaged in anti-dumping investigations because all data on prices and production costs in Vietnam are subject to investigation by the US authorities. The United States still refuses to consider Vietnam as a market economy. Vietnam government needs to strengthen its active support role for Vietnamese exporters to prevent and respond effectively to anti-dumping measures of trading partners especially the United States.

At the same time, industry organizations and associations participating in dumping lawsuits should be more actively involved in anti-dumping cases. The willingness and initiative of trade associations play important roles in preventing and minimizing the negative impacts of anti-dumping cases. In addition to these, industry associations should set up their representative offices abroad to focus on key markets and proactively deal with lawsuits as soon as possible.

Besides, Vietnamese enterprises need to focus on improving their competitiveness, proactively applying quality management systems according to international standards, branding and product promotion, training and improving the quality of human resources, etc. to promptly deal with disputes that may arise in international trade.

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Chapter 9
An Analysis of Supply Response of Black Tiger Shrimp Production Using Nerlove Model: A Case Study of the Vietnamese Mekong Delta

Le Nhi Bao Ngoc, Le Quang Thong, and Thai Anh Hoa

Abstract This study aims to analyze the impact of black tiger shrimp prices and other factors on shrimp area in the Mekong Delta using the supply response function based on a partial adjustment model of Nerlove. The model uses panel data gathered in four provinces, namely, Ca Mau, Bac Lieu, Soc Trang, and Kien Giang, and employs fixed-effect method in supply response function model. Obtained estimates indicate adaptive expectation hypothesis is to best fit the data. It also proves that in both short run and long run, the expected prices have significant influence to the supply response of tiger shrimp farmers. Particularly, the response of area to farm-gate price, input farm-gate price, and competitive prices are all elastic, showing the importance of these factors in the supply function of black tiger shrimp farming in Mekong Delta.

Keywords Black tiger shrimp · Nerlove model · Supply response · Price elasticity · Mekong Delta

1 Introduction

Studies on the supply response of agricultural products began to develop early, in particular, the supply response of agricultural products such as cereals and food developed by some scholars such as Nerlove (1958a, 1958b) and Askari and Cummings (1977). Nerlove (1958a, 1958b) has developed a partial adjustment

L. N. B. Ngoc (✉)
Ca Mau Community College, Ca Mau, Vietnam

L. Q. Thong
Nong Lam University, Ho Chi Minh City, Vietnam

T. A. Hoa
Tra Vinh University, Tra Vinh, Vietnam

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supply response function in accordance with supply theory. Since then, Nerlove supply response function has been of interest to many scientists and applied in experimental studies of food crops and non-food crops in some countries such as the USA, India, Thailand, and Chile (Holt and Johnson 1988), chicken supply in the USA (Chavas & Johnson, 1982), and the catfish industry in the USA (Nguyen, 2010). Nerlove supply response function (1958) is a dynamic supply response model combined with the expected price set in the form of self-regression model. Therefore, supply can be a function of delayed price and other factors (Tomek & Robinson, 1981). In addition, the feasibility of the experimental study of the Nerlove supply response function depends on the structure of data and the selection of the estimation method (Baum & Christopher, 2006). Therefore, researchers need to determine the model of expected price and data structure to determine the appropriate function form. Therefore, a theoretical framework helps researchers to have a scientific basis for choosing an approach to conduct an experimental analysis of the supply of black tiger shrimp in the Mekong Delta that is very necessary. The focus of the supply response analysis is to determine the model of the expected price and the expected hypothesis of the household. Because it is very useful for policymakers to understand the link among the price, decision of farmers, and factors related to specific supply.

According to the evaluation of the Ministry of Agriculture and Rural Development (MARD) and functional sectors, brackish shrimp is the main aquaculture product. In 2017, the farming area is 705, 000 hectares and accounts for over 64% of the aquaculture area of the whole country. In the period of 2010–2017, the value of shrimp export turnover of the whole country increased from 2.1 billion USD to 3.8 billion USD, accounting for 46.0% of the export value of the fishery sector (Agromonitor 2018; VASEP, 2018). Therefore, brackish shrimp is identified as a main and potential product with many advantages in development (MARD, 2015, 2017).

Mekong Delta has advantages in farming, processing, and exporting brackish shrimp. The area and production of black tiger shrimp in the region account for over 90% and 80% compared to the whole country, respectively. Total capacity is over one million tons of products per year, and the number of factories accounts for over 60% compared to the whole country (MARD, 2015). The area and production of brackish water shrimp in the Mekong Delta, black tiger shrimps are cultured in eight coastal provinces, including Long An, Tien Giang, Ben Tre, Tra Vinh, Soc Trang, Bac Lieu, Kien Giang, and Ca Mau (VASEP, 2016; Agromonitor, 2017).

In 2015, when white leg shrimp price dropped sharply,[1] many households switch to raising black tiger shrimp as a traditional object of high value.[2] Some provinces have a large area, and the output of black tiger shrimp increased sharply. In

[1] The price of white leg shrimp in the first week of June increased by 10,000–15,000 VND/kg. The second week continued to increase by 3000–5000 VND/kg.

[2] At the same time, applying the model of raising black tiger shrimp with other aquatic products such as crab and perch has relatively good efficiency, increasing the ability to fight diseases.

particular, Kien Giang province increased by 11.2% in area and 15.7% in production, and Soc Trang increased by 2.8% in area and 48.1% in production. This leads to an increase of 4.0% in the area and production of black tiger shrimp in the Mekong Delta compared to 2014 (VASEP, 2015).

The paper deals with analyzing the dependence of black tiger shrimp supply on shrimp price, input element prices, competitive product prices, and other non-price factors affecting the supply in Mekong Delta provinces in the context of the interaction among prices in different market segments in the marketing channel and among prices over time in the market.

2 Methodology

2.1 Theoretical Framework

In agricultural production, due to the biological characteristics of plants and animals, the supply cannot immediately respond to price changes. Manufacturers often rely on the past prices to form the expected price for the current production and thus make decisions on the production. Therefore, supply can be a function of the delayed price and other factors (Tomek & Robinson, 1981). The dynamic supply response model combined with the expected price is set in the self-regression model of Nerlove (1958a, 1958b) with cultivated area (At), presented in the following system of equations:

$$\text{Supply function}: A_t^* = \alpha_0 + \alpha_1 P_t^* + \alpha_2 Z_t + \alpha_3 T + u_t \tag{9.1}$$

$$\text{Expected price}: P_t^* - P_{t-1}^* = \beta\left(P_{t-1} - P_{t-1}^*\right) \tag{9.2}$$

$$\text{Manufacturing adjustment}: A_t - A_{t-1} = \varphi\left(A_t^* - A_{t-1}\right) \tag{9.3}$$

where A_t^* is the expected area (ha); P_t^* is the expected price of the product in the period t (thousand dongs); P_{t-1}^* is the expected price of the product in the period t−1 (thousand dongs); P_t is the price of the product in the period t (thousand dongs); $A_t - A_{t-1}$ is the real change (ha); $A_t^* - A_{t-1}$ is the expected change (ha); A_t is the area in the period t (ha); A_{t-1} is the p cultivated area in the period t−1 (ha); Z_t is the factor affecting the area of the product in period t; T is a variable that reflects the time effect; u_t is random disturbance; α_i are the intercept and slope coefficients; β is the coefficient adjusting the expected price; φ is the coefficient adjusting the production; and $0 < \varphi \leq 1$ is an adjusting coefficient.

The characteristics of the agricultural sector are uncertain as imperfect price information and the limitation in knowledge and vision of farmers. According to Nerlove (1958a, 1958b), the expected price is a Cobweb price model with adaptive expectation (AE), rewritten by a lagged price model (Braulke, 1982).

$$A_t = \delta_0 + \delta_1 P_{t-1} + \delta_2 A_{t-1} + \delta_3 A_{t-2} + \delta_4 Z_t + \delta_5 Z_{t-1} + \delta_6 T + v_t \quad (9.4)$$

where $\delta_0 = \alpha_0\beta\varphi$; $\delta_1 = \alpha_1\beta\varphi$; $\delta_2 = [(1-\beta) + (1-\varphi)]$; $\delta_3 = -(1-\beta)(1-\varphi)$;$\delta_4 = \alpha_2\varphi$; $\delta_5 = -\alpha_2(1-\beta)\varphi$; $\delta_6 = \alpha_3\varphi$; and $v_t = \varphi(u_t-(1-\beta)u_{t-1})$.

The supply elasticity determined by Braulke (1982) is calculated as follows. The short-run supply elasticity coefficient is

$$E_{SS} = \delta_1 * \left(\frac{\overline{P}}{\overline{A}}\right) \quad (9.5)$$

and the long-run supply elasticity coefficient is

$$E_{ls} = \delta_1/(1 - \delta_2 - \delta_3) * \left(\frac{\overline{P}}{\overline{A}}\right) \quad (9.6)$$

2.2 Research Overview

Nerlove (1956) is the first person to study the supply response to analyze the effect of expected price changes on the amount of supply, followed by Krishna and Rao (1967), Nerlove (1979), Krishna and Raychaudhuri (1980), Narayana and Parikh (1981), Gunawardana et al. (1995), and Utuk (2014). Askari and Cummings (1977) applied the Nerlove supply response model (1958) with the dependent variable of area. Many authors have expanded their research to other survey subjects such as chicken industry of Chavas and Johnson (1982), sugarcane supply of Kumawtat et al. (2012), pork industry of Holt et al. (1986), and catfish farming industry of Nguyen (2010). The theoretical price models with the expected hypothesis used in Nerlove supply response analysis (1958) are estimated with the secondary data series as Cobweb expected price model hypothesis (Vo, 2004, 2011).

2.3 Estimation of Supply Response Using Nerlove Model

$$A_{it} = \delta_0 + \delta_1 \sum_{j=0}^{2} \ln A_{it-j} + \delta_2 \sum_{j=0}^{2} \ln P_{it-j} + \delta_3 \sum_{j=0}^{2} \ln Pm_{it-j} + \delta_4 \sum_{j=0}^{2} \ln Pc_{it-j} + \delta_5 \sum_{j=0}^{2} \ln Ps_{it-j} + \lambda_{it} + v_{it} \quad (9.7)$$

where $\ln A_{it}$ is the black tiger shrimp farming area at the time t (ha); $\ln A_{it\ -\ j}$ is the black tiger shrimp farming area at the time t−j (ha); $\ln P_{it\ -\ j}$ is the black tiger shrimp price in the original year (2010) at the time $t-j$ (thousand dongs/tons); $\ln Pm_{it\ -\ j}$ is the white leg shrimp price in the original year (2010) at the time $t-j$ (thousand dongs/tons); $\ln Ps_{it\ -\ j}$ is the black tiger shrimp price in the original year (2010) at the time $t-j$ (thousand dongs/million post); $\ln Pc_{it\ -\ j}$ is the sea scab price in the original year (2010) at the time $t-j$ (thousand dongs/ton); i,t are the indicators degerminating province and time of the data, respectively; λ_{it} is observed factors that have a fixed effect on $\ln A_{it}$ and can be correlated with the independent variables in the model (7); ν_{it} is random disturbances; and δ_i is the intercept and slope coefficients.

2.4 Data Collection

The shrimp supply response analysis model in the Mekong Delta is based on panel data from the first quarter of 2014 to the fourth quarter of 2017 of four provinces (Ca Mau, Bac Lieu, Soc Trang, and Kien Giang), with 64 observations. The data series are implemented by the Department of Statistics and the Department of Finance of the four provinces and unified by the functional industry before monthly publication, storage, and reporting to management levels. After that, the price data series of black tiger shrimp and white leg shrimp were attributed to the actual price in 2010 before conducting the analysis.

2.5 Data Analysis

Fixed-effect (FE) method and random effect (RE) method are used to estimate Nerlovian supply response function adjusted according to area (model 7). Then, Hausman test (1978) is used to choose one among the two models, RE vs FE, with the hypothesis H_0 that the estimated coefficient of RE and FE is undifferentiated. If P-value is less than 0.05, H_0 will be rejected. Rejecting H_0 implies that the FE estimation results will be more appropriate (Baum & Christopher, 2006).

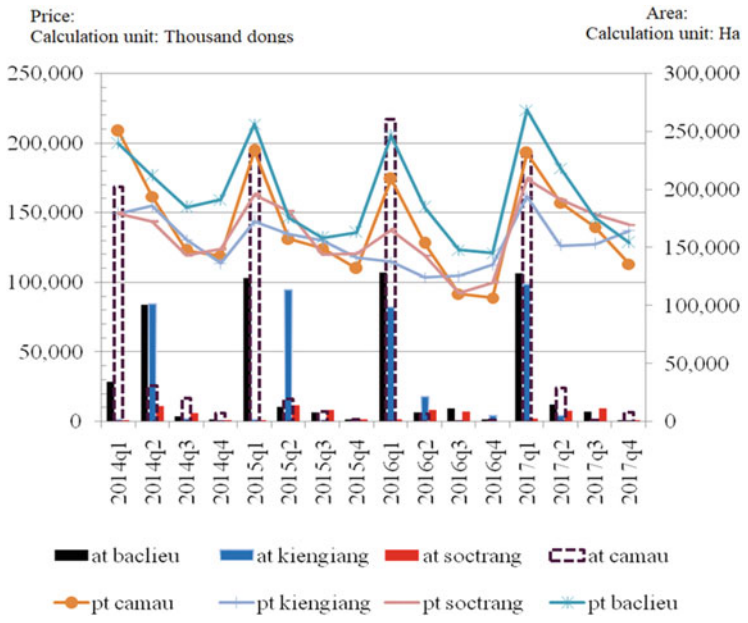

Fig. 9.1 Area and price of black tiger shrimp through time (Source: Synthesized from the surveys of the Department of Agriculture and Rural Development and Statistical Offices of the provinces)

3 Results

3.1 Relationship between Farm-Gate Price and Area and Output of Black Tiger Shrimp

The statistical data is presented in Fig. 9.1, which shows the evolution of the farm-gate price of black tiger shrimp corresponding with black tiger shrimp farming area from the first quarter of 2014 to the fourth quarter of 2017 in four provinces—Bac Lieu, Kien Giang, Soc Trang, and Ca Mau – with the largest area in Ca Mau, Bac Lieu, and Kien Giang provinces, accounting for over 86% of the area of black tiger shrimp farming in the whole Mekong Delta.

The area of black tiger shrimp farming is largest in the first quarter of the year when the price of black tiger shrimp reaches the highest point. In the second quarter, the area and price of shrimp tend to decrease and bottom in the third quarter and then rise again in the fourth quarter and peak in the first quarter of the next year. This shows that, in the provinces surveyed, farmers decided on the area of black tiger shrimp farming based on the adjustment of selling price in the year. According to economic theory, the farmers' decision to adjust the farming area is not effective due to the delay of 4–5 months between the time of stocking and harvesting black tiger shrimp. The reason is that black tiger shrimp are mainly cultured under the improved extensive model, combined with rice, forest, and other aquatic species, accounting

for over 64% of the whole area of brackish shrimp farming in the region. This model of production depends largely on nature, and the distribution is not uniform between the quarters of the year. To better understand this adjustment, the author continues to analyze the relationship between the price and output during this period.

3.2 *Descriptive Statistics and Stationarity Test of the Panel Data*

Table 9.1 presents the descriptive statistics of the price variables of black tiger shrimp. The standard deviation of the variables is relatively small, indicating minor price fluctuations between periods. The price series in the survey period are stationary at the original series with 5% statistical significance level. Therefore, price data series satisfy the conditions for quantitative analysis by FE and RE estimates.

3.3 *Estimation of Supply Response Model of Black Tiger Shrimp*

The estimation results of Nerlove supply response function of black tiger shrimp in the Mekong Delta, which is adjusted based on the output using FE and RE, are presented in Table 9.2. The level of significance of Hausman test with P-value <0.05 implies that the FE is appropriate and the model has no serial correlation. However, the Nerlove supply response function by output is violated in terms of the assumption of heteroscedasticity so the author adjusted by the model with robust standard error. This means that the estimation results by FE are reliable.

Short-run estimation of the supply response model shows that the late price of the previous season affects the decision to adjust the farming area positively and strongly (Askari & Cummings, 1977). This is the evidence that the black tiger

Table 9.1 Test of unit root of black tiger shrimp price panel data

Variables	Variables name	Static	P-value
$\ln A_{it}$	Black tiger shrimp farming area	−5066***	0.000
$\ln Am_{it}$	White leg shrimp farming area	−6647***	0.000
$\ln P_{it}$	Farm-gate price of black tiger shrimp	−3303***	0.000
$\ln Pm_{it}$	Farm-gate price of white leg shrimp	−5385***	0.000
$\ln Pst_{it}$	Farm-gate price of black tiger shrimp seed	−2570***	0.005
$\ln Pc_{it}$	Farm-gate price of mud crabs	−1902**	0.029

Source: Summarized from the test results of the survey panel data.
Note: ** and *** correspond to statistical significance of 5% and 1%, respectively

Table 9.2 The estimation results of Nerlovian production area response

Variable name	Variables	FE	RE
ln (black tiger shrimp farming area in the quarter $t-1$)	$\ln A_{it-1}$	−0.32** (−2.38)	−0.19 (−1.36)
ln (black tiger shrimp farming area in the quarter $t-2$)	$\ln A_{it-2}$	−0.68*** (−4.89)	−0.49*** (−3.24)
ln (black tiger shrimp price in the quarter $t-1$)	$\ln P_{it-1}$	2.72* (1.88)	2.66* (1.75)
ln (black tiger shrimp price in the quarter $t-2$)	$\ln P_{it-2}$	2.65 (1.50)	2.63 (1.55)
ln (white leg shrimp price in the quarter $t-1$)	$\ln Pm_{it-1}$	−3.81** (−2.48)	−4.22** (−2.39)
ln (whiteleg shrimp price in the quarter $t-2$)	$\ln Pm_{it-2}$	3.50** (2.2)	2.01 (1.30)
ln (mud crab price in the quarter $t-2$)	$\ln Pct_{it-2}$	−2.81*** (−3.31)	−3.13*** (−3.30)
ln (black tiger shrimp seed price in the quarter t)	$\ln Pst_{it}$	1.32 (1.61)	1.46 (1.57)
ln (black tiger shrimp seed price in the quarter $t-2$)	$\ln Pst_{it-2}$	−3.03*** (−3.50)	−2.73*** (−2.98)
Constant	c	7.97 (0.35)	26.51 (1.35)
R^2		0.57	0.52
Wald statistic (χ^2 value)		6.44	36.00
Level of significance (Prob> χ^2)		0.00	0.00
Hausman statistic (χ^2 value)		71.75	
Level of significance (p-value)		0.00	
Modified Wald test (χ^2 value)		5.48	
Level of significance (Prob> χ^2)		0.24	
Lagrange multiplier test		6.42	
Level of significance (Prob>F)		0.09	

Note: * and *** correspond to statistical significance of 5% and 1%, respectively
Source: Summarized of estimated results in the researched provinces.

shrimp farming area in the provinces surveyed is very sensitive to the impact of the farm-gate price of the products in the season. This implies that farmers quickly update information when establishing expected prices in the process of adjusting the supply of black tiger shrimp by expanding the shrimp farming area to increase the output of black tiger shrimp both in the short run and long run. Therefore, it is necessary to have policies to improve the capacity and market access of the farmers based on each group of producers.

The coefficients of supply elasticity by output with farm-gate price of the product, farm-gate prices of input elements, and farm-gate prices of competitive products are elastic. Low productivity and the application of science and technology in black tiger

shrimp farming are the causes of the insignificant adjustment of black tiger shrimp supply when facing the impact of its own farm-gate price, input element farm-gate prices, and competitive product farm-gate price in the short run. Therefore, it is necessary to have breakthrough policies on technical, scientific, and technological solutions in the improved extensive black tiger shrimp farming area.

The estimated results of the supply response model in terms of the farming area have an impact on black tiger shrimp area and output in the current quarter (Nguyen, 2010). The estimated results show that the supply adjustment is affected by the prices of black tiger shrimp, the competitive products, and input elements in accordance with supply law. As a result, commercialization has a greater positive impact on the expansion of area than on the increase of the output of black tiger shrimp in the researched provinces in the Mekong Delta (Learn & Cochrane, 1961).

3.4 Coefficient of Supply Elasticity in Farming Area

This implies that black tiger shrimp farming in the researched provinces in the Mekong Delta is being adjusted by farmers based on the selling prices of the product itself and of the competitive products. However, the elasticity coefficient of these factors in the short run is greater than in the long run. Analysis results showed that black tiger shrimp farming in the researched provinces in the Mekong Delta is not yet stable (Tables 9.3 and 9.4).

Table 9.3 Coefficient of supply elasticity in the short run

Variable name	Variable	Area
Black tiger shrimp price in the quarter $t-1$	εP_{it-1}	2.72
Black tiger shrimp price in the quarter $t-2$	εP_{it-2}	2.65
White leg shrimp price in the quarter $t-1$	εPm_{it}	−3.81
White leg shrimp price in the quarter $t-2$	εPm_{it-2}	3.50
Mud crab price in the quarter $t-2$	εPc_{it-2}	−2.82
Black tiger shrimp seed price in the quarter t	εPs_{it}	1.32
Black tiger shrimp seed price in the quarter $t-2$	εPs_{it-2}	−3.04

Source: Summarized and calculated in the researched provinces

Table 9.4 Coefficient of supply elasticity in the long run

Variable name	Variable	Area
Black tiger shrimp price	εP_{it}	2.68
White leg shrimp price	εPm_{it}	−0.15
Mud crab price	εPc_{it}	−1.40
Black tiger shrimp seed price	εPs_{it}	−0.85

Source: Summarized and calculated in the researched provinces

4 Discussion and Conclusions

The study has used the FE estimation method for analyzing the reaction function of Nerlove supply of black tiger shrimp in the Mekong Delta; with the late area variable (quarter $t-1$ and $t-2$) of the previous season, the negative correlation with the variable area of tiger shrimp farming of the current crop. This means that farmers who increase the area of previous tiger shrimp farming are the factors that increase the supply to the market, the current area of black tiger shrimp farming will decrease, leading to a reduction in supply to the market and vice versa. At the same time, farm production decisions are related to competitive products and farming techniques.

In the short and long term, the coefficients of supply elasticity of output at the farm-gate price of the product, the gate price of the farm of inputs, and the price of the competitive farm gate (mud crab) are elastic. However, the coefficient of elasticity of output supply with the price of farm gate of competitive product (White leg shrimp) is elastic. Meanwhile, the coefficients of supply elasticity in terms of the farm-gate price of the product, the price of the farm gate of the input factor, and the price of the farm gate of the competitive product are elastic. This shows that the area of tiger prawn farming is very sensitive before the price fluctuation of the previous crop. The supply of black tiger shrimp moved to the left before the impact of the increase in the price of tiger shrimp and competitive product prices.

Based on the research results, policy suggestions are as follows:

1. The price of the previous crop is the expected price which is the basis for farmers to decide the area of shrimp farming, later than the actual price, so the supply is also lagging compared to the demand in the market. Therefore, timely price forecasting and dissemination of price information have positive implications in timely supply adjustment.
2. Through analysis, results show the heavy dependence of this industry on nature. Therefore, it is necessary to have policies to improve capacity, market access, and production awareness to protect the environment and natural resources of shrimp farmers.

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Chapter 10
Highly Skilled Migration, Recognition and Motivation Towards Knowledge Share with the Indigenous Co-Workers: Empirical Findings from the Vietnamese in the Laos Construction Sector

Ngoc Liem Le, Maggi W. H. Leung, and Annelies E. B. Zoomers

Abstract There has witnessed a large number of Vietnamese nationals working in Laos, in particular the highly skilled so far. Admittedly, there has been an immense production of knowledge as well as considerable impacts created by this cohort and the local workers. Notwithstanding, very little is known about how these subjects recognise the importance of and have motivation towards knowledge share as well. This paper is part of a research project on migration flow from Vietnam to Laos in the host construction sector that its objective was twofold. First, based on in-depth interviews with 25 nationals of both the states, it examined the recognition of and motivation towards knowledge exchange amongst the Viet elites and their local work partners. The data was processed and analysed using QSR Nvivo 12. The findings from this study revealed that most of the workers did recognise the importance of and express lots of their motivation to knowledge externalisation. Of which, sharing knowledge to work correctly and better; to develop profession and social network; and to attain collective goals were the most outstanding factors. Second, based on the findings, some concluding remarks and further research implications were exhibited.

Keywords Highly skilled migration · Recognition · Motivation · Knowledge share · Vietnam · Laos

N. L. Le (✉) · M. W. H. Leung · A. E. B. Zoomers
Utrecht University, Utrecht, The Netherlands

University of Economics, Hue University, Hue, Thua Thien- Hue, Vietnam
e-mail: n.l.le@hueuni.edu.vn

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1 Introduction

To date, there has witnessed a considerable number of Vietnamese highly skilled working in Laos, in tandem with a solid and exhaustive cooperation under a variety of bilateral cooperative agreements signed at national and local levels between the two countries (Chau, 2018; Pham et al., 2017), especially labour cooperation agreement on July 1, 2013. It is estimated that there are some 40,000 Vietnamese highly skilled mostly working in main sectors in Laos such as construction, energy, transport, agriculture, forestry, mining, telecommunication and services (Cong Doan, 2019). The great contribution of this Vietnamese cohort towards Laos development in the construction sector has been widely recognised for years (Phetphoxay Sengpaseuth, 2017). This is because Lao workers' capacity is said to be relatively low in comparison with their Vietnamese counterparts' and some of their neighbours' (World Bank, 2013). Therefore, it is expected from Laos government that "[Vietnamese] workers are expected to train Lao workers" (recited from Ngo, 2012) during their stay in the country. This discloses that, to an extent, Laos highly values the role of knowledge exchange amongst its nationals with Vietnamese highly skilled nationals in the construction sector. However, a big question arising here is whether the Vietnamese highly skilled and local workers do recognise the importance of and then have motivations towards knowledge share. Notably, there is very little empirical evidence interrogating this (Nguyen, 2014). To us, this is literally a big gap in research agenda. Therefore, this qualitative research, as part of an ongoing project on Vietnamese migration in the Lao construction sector, was carried out through participant observation and in-depth interviews with 13 are managerial and 12 non-managerial workers of both the countries to fill out such niches.

The remaining of this article is structured as follows. First, a literature review on highly skilled migration, recognition and motivations towards knowledge mobility is discussed. Next, it provides a brief but comprehensive description on research contexts as well the methods employed. Then, the section of results and discussion is presented. Finally, it comes up with some concluding remarks and implications for further research.

2 Highly Skilled Migration, Recognition and Motivations Towards Knowledge Share

The term "highly skilled" has left constant debates amongst scholars (Samers & Collyer, 2017). Generally speaking, an individual is deemed as highly skilled when (s)he either holds a university degree or has an equivalent experience in a given field (Iredale, 2001; Triantaphyllidu, 2016). This view is also widely accepted amongst some researchers in the 1990s (Findlay & Cranston, 2015). Highly-skilled migration has received lots of attention from academics (Beaverstock, 1994, 2011; van Riemsdijk & Wang, 2017; Williams, 2007a). Highly skilled migration refers to

"migration of persons with tertiary level education, whether they achieved that level before or after migration" (CARIM, 2009; recited in Shalabi, 2010, p. 1). In fact, the emergence of the so-called world cities with a dense convergence of international highly skilled migrants (e.g. New York, Tokyo, Singapore, etc.) has grasped lots of attentions from geography researchers (Beaverstock, 1994, 2002, 2005, 2011; Findlay & Cranston, 2015; Ryan & Mulholland, 2014a, 2014b, 2015; Skeldon, 2009; Yeoh & Lam, 2016). However, these studies mightily concentrated on international highly skilled labours in world cities but not in the rest of the world (Kunz, 2016; van Riemsdijk & Wang, 2017), particularly in developing countries (e.g. some areas of Asia such as the movement in the Southeast).

Knowledge share, another closely related term from highly skilled migration, should be considered within elite migration literature. Knowledge share refers to "the process of knowledge possessors transferring personal professional knowledge to knowledge demanders" (Gunawan & Shieh, 2016, p. 1103). For decades, the link between epistemic migration and knowledge share has been paid by many pundits (Beaverstock, 2002, 2005, 2012; Faulconbridge, 2006; Gertler, 2003; Larner & Laurie, 2010; Saxenian, 2005; Williams, 2006, 2007a, 2007b; Williams & Baláž, 2008). Upon their cross-border passage, migrants bring over their knowledge to new specific contexts where it may be mixed or integrated to other knowledge by participating diversely formal and informal practices, not only within but outside their organisation (Beaverstock, 2002). However, a key question arising is that whether these elite migrants and local workers do recognise the importance of and then have motivations towards knowledge exchange. Regarding this point, De Vries et al. (2006) reckon that individuals do acknowledge knowledge share whether personally worthwhile or important so as to reach collective goals and are therefore willing and eager for sharing their knowledge.

In what follows, we presented research locations as well as the methods used in this study. Then, the section of results and discussion in connection with the existing literature aforesaid was exhibited.

3 Methodology

In this study, participant observation and in-depth interviews were employed to collect primary data. Fieldwork was conducted in Hanoi and Vientiane from the middle of July to the end of October 2018 (Fig. 10.1). There were three channels used to identify and recruit participants including via direct corresponding introduction on the spot, via authors' social contacts and through participant observation in the field. Thereby, 25 in-depth interviews in total were conducted with 18 Vietnamese and 7 Laos, 13 managements and 12 non-managements. Of Vietnamese nationals, three were returnees, and the rest were still working in the sector in Laos. The recordings were transcribed and then coded by using QSR Nvivo 12 for analytical purposes. For anonymity, pseudonym was assigned to individual

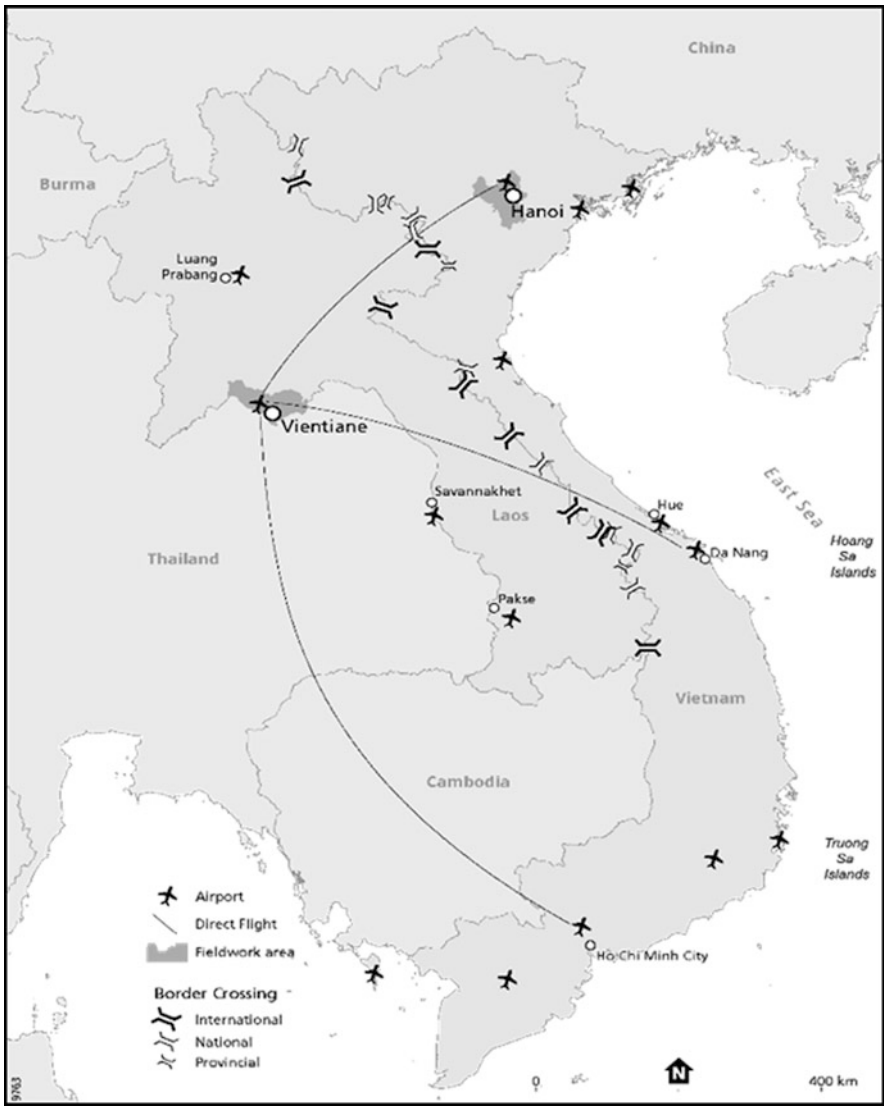

Fig. 10.1 Map of Vietnam and Laos and research locations

participants by codifying from *1 to *25, respectively, where the asterisk denoted either V for Vietnamese or L for Lao respondents.

4 Results

Figure 10.2 presented the recognition towards the importance of knowledge share amongst Viet highly skilled migrants and their local workers in the Laos construction sector. As Fig. 10.2 showed, 23 respondents contended that sharing knowledge amongst them was "essential" or "very important", equivalently accounting for 92 percent of the total, whereas only 2 Vietnamese revealed "not important" and "don't know", accounting for 8 percent of the total. For example, V2 recounted:

"I considered it [sharing knowledge] very important because we were working in an organisation and therefore sharing knowledge and skills amongst us was in order to develop together. So, what we knew, we would share and they would also help us to deal with our work in accordance with our intention quickly. If we [Vietnamese workers] did not, they had to take much time to find out the know-how. So, it was better to share at work". [male, returning staff].

This finding was in line with De Vries et al. (2006). However, as aforesaid, two Vietnamese migrants claimed that they did not view sharing knowledge between them and their Lao co-workers important or did not know. This was because of many barriers during knowledge exchange process between them, that went beyond of this article.

Also, there were various reasons released to explain why it was essential to share knowledge that permitted us to subsequently scrutinise their motivations towards knowledge diffusion amongst them. By that, motivations to share knowledge amongst Viet elites and their local co-workers were grouped into six categories: (1) doing work correctly and better; (2) developing expertise and social network; (3) attaining collective goals; (4) understanding each other; (5) saving time, efforts and costs; and (6) others (Fig. 10.3). Of which, sharing knowledge to do work correctly and better was uncovered most by 15 participants with 24 coding references, followed by developing expertise and social network and attaining collective goals by 12 participants mentioning 18 coding references and 10 participants talking about 13 coding references, respectively. For instance, V1, male returning architect,

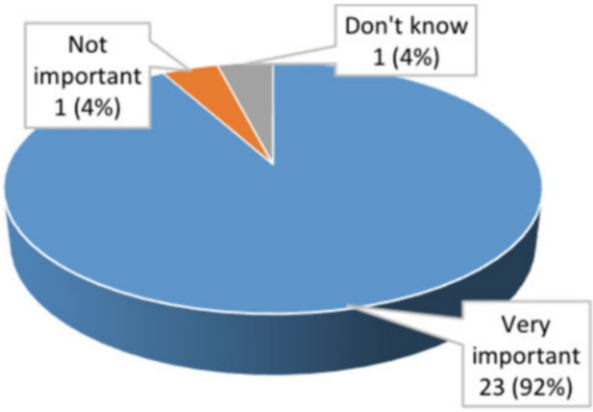

Fig. 10.2 Recognition to knowledge share between the Vietnamese highly skilled and Lao work partners (Source: The authors' data analysis in Nvivo)

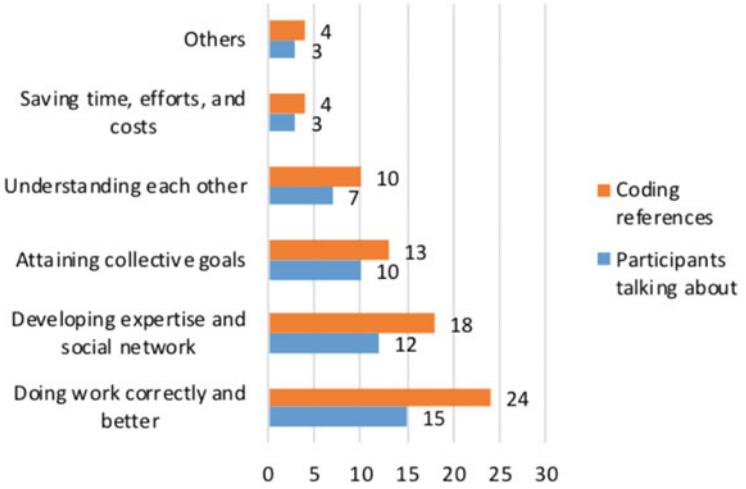

Fig. 10.3 Motivations towards knowledge share between the Vietnamese highly skilled and Lao work partners (Source: The authors' data analysis in Nvivo)

narrated: "All the thing our technicians [Vietnamese highly-skilled] knew, we would have to share with our Lao co-workers so that they could do it correctly or as well as possible. If we did not share technical materials, we were sure that they would have done it incorrectly". Or as L8 revealed: "So, it is time for us to exchange our knowledge, skills, and experience each other so that we could know how to do a work, how to deal with a problem properly, or how to get our targets or goals" (male accountant). In fact, both the Viet highly skilled and Lao counterparts stressed their recognition and motivations towards knowledge share between them that helped us to confirm the question posed in this study before.

5 Conclusion

For many decades, the presence of Viet highly skilled in Laos has been expected to boost the local workers' capacity from Lao government through knowledge diffusion amongst them. Nevertheless, little is known if these individuals do recognise and are motivated to share their knowledge with each other. This study was aimed to challenge this question. By that, the findings from this study uncovered that most of the Vietnamese highly skilled and their indigenous co-workers did realise the importance of knowledge share as well as had motivations towards knowledge share. These findings were very helpful for public policy makers of both states so as to release upcoming policies and activities to stimulate knowledge externalisation between individuals of the two countries. However, the barriers towards this knowledge exchange process should be studied by further research so as to deeper scrutinise what really hidden as blockades to knowledge production and

communication process between these subjects. Also, some other methods, such as group focus discussion, should be employed to identify multi-perspectives from other stakeholders involved in the process. Finally, this paper contributed to the lack of migration literature that contextualised Vietnam and Laos.

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Ethics approval and consent to participate: This study involving human participants was conducted in accordance with the ethical standards of the institutional committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all participants included in the study.

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Chapter 11
Is Public Debt Good or Bad for Economic Growth? Fresh Evidence in Emerging Economies

Le Thanh Tung

Abstract This paper empirically investigates the impact of public debt on economic growth in the case of 12 emerging economies in 1980–2015. Our study maybe is the first one which focuses only on emerging countries. Unlike many previous studies, our result clearly shows that public debt has a positive impact on economic growth. This evidence also presents an important role of public debt which should be robustly motivated in the coming period. Besides, our result finds both domestic investment and remittances have positive impacts on economic growth during the study period. However, inflation is pointed out that this variable can harm economic growth. The trade openness has a negative effect on economic growth because many countries have deficits in their trade balance in the study period. Finally, our research result is useful information for policymakers to promote economic growth in emerging countries in the near future.

Keywords Public debt · Economic growth · Emerging economy

1 Introduction

Public debt is popularly known as any financial obligation (including bonds or loans) assumed by the governments, where they agree to make interest and principal payments on certain times. Public debt maybe is one of the popular research topics of economic development in the past decades. In many countries, public debt is an important source of finance for governments to promote economic growth as well as implement socioeconomic goals. Therefore, public debt is always associated with government activities in many countries. Besides serving public investment, sometimes, public debt is also a financial source to serve the state system when tax

L. T. Tung (✉)
Policy and Applied Economics Research Group, Faculty of Economics and Public Management, Ho Chi Minh City Open University, Ho Chi Minh City, Vietnam
e-mail: tung.lt@ou.edu.vn

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revenue is not enough to compensate. So there is a concern that the increasing public debt will also raise the pressure on repayment of the government in the future.

There are some different kinds of arguments about the role of public debt on economic growth. Firstly, some results suggest that public debt has an active role in promoting economic growth (Jayaraman & Lau, 2009; Pescatori et al., 2014). When governments raise their debts (e.g., issue bonds to get money), this activity helps them to avoid raising taxes and provides fresh financial resources to stimulate the economy through public expenditures. Theoretically generating, it is a way which is able to have additional tax revenue from prosperous businesses as well as taxpayers in the next period. However, on the other hand, there are empirical results suggesting that public debt affects negatively economic growth or gross output growth (Schclarek, 2004; Reinhart & Rogoff, 2010; Furceri & Zdzienicka, 2012; Ncanywa & Masoga, 2018). These studies note the negative impact of government on the growth performance of the developing countries in the medium term and long term. Furthermore, a lower growth can also result in a higher ratio of public debt to gross domestic product (GDP). They conclude that the rising public debt is among the biggest macroeconomic risks facing developing economies which makes more difficult for the governments to control the economy heading toward high growth. Thirdly, there are some empirical results which conclude that there is no relationship between these two important macro-variables (e.g., Panizza & Presbitero, 2014) or find no evidence for a long-run reverse impact of debt on growth (Lof & Malinen, 2014). Finally, there are both positive and negative impacts of public debt on economic growth in the recipient economies (Smyth & Hsing, 1995; Kumar & Woo, 2010; Baum et al., 2013; Mencinger et al., 2015).

Therefore, it is necessary to focus on a specific group of countries. Because this topic is studied on a large scale of countries which have many different socioeconomic backgrounds, it is too difficult to conclude about the real relationship. Besides, the result might be difficult to successfully use in a country at a specific level of economic development. In recent decades, there are some economic crises that have occurred and are maybe related to public debt. So public debt has become an obsession and fear, and there are many arguments which concluded that it is the main cause of the economic crisis in countries or regions or at global level. Fears of public debt are gradually making countries become afraid of this financial source in the context of lack of investment capital flows as well as narrowing demand stimulus capital flows during periods of declining aggregate demand. Therefore, the research results related to public debt are valuable sources of information for policymakers in order to stabilize and promote economic growth in the coming period.

In two previous decades, a group of countries with rapid economic growth is called emerging economies. On the other hand, an emerging economy can be described as a national economy that is progressing toward becoming a more advanced platform. An emerging economy always is understood relating to rapid growth and industrialization. Besides, these economies are expanding role both in the world economy and on the political frontier in their region. For the first time, a group of 11 emerging countries is called “the Next Eleven” by some economists of Goldman Sachs. The Next Eleven has 11 fast-growth economies including

Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, the Philippines, South Korea, Turkey, and Vietnam (Wilson & Stupnytska, 2007). On the other hand, Goldman Sachs also predicts this group of emerging economies will have huge economies of scale in the near future. Emerging countries are analyzed based on outstanding criteria for macroeconomic stability, political stability, and openness of investment and trade policies. Although not homogeneous in terms of economic structure, human resource, and management quality or other factors, this emerging economy group has one item in common: they have many conditions for rapid economic growth in the long term. This group of countries is forecasting to become the world's largest economies in the twenty-first century (Wilson & Stupnytska, 2007). More recently, in 2009, the Economist Intelligence Unit (EIU) also announced another group of emerging countries, named "CIVETS." This group has six economies including Colombia, Indonesia, Vietnam, Egypt, Turkey, and South Africa (McGregor, 2011).

There are some research results focusing on the impact of public debt on economic growth in the region level such as the Pacific region (Jayaraman & Lau, 2009), OECD countries (Panizza & Presbitero, 2014; Mencinger et al., 2015), the Euro area countries (Checherita-Westphal & Rother, 2012; Baum et al., 2013), developing and industrial countries (Schclarek, 2004), and developed countries (Lof & Malinen, 2014). However, as far as we know, there is no research going into the emerging group of countries, for example, the Next Eleven defined by the economists of Goldman Sachs. Therefore, our research results will provide new evidence of the impact of public debt on economic growth in the context of emerging countries. In addition, the results of our research are also expected to be a good reference source used for policymakers in these countries in the coming period.

This paper has four main sections as follows: first, we have an introduction and a fast literature review on the relationship between public debt and economic growth. Second, we present the methodology and data source which will be employed to examine the impact of public debt on economic growth in the case of emerging economies. Third, there is a section which shows the results of the panel analysis and some discussions. Finally, conclusions and policy implications are provided.

2 Methodology

2.1 Econometric Methodology

In our research model, the dependent variable is economic growth represented by the growth of GDP per capita. Besides, the most important variable is public debt, and there are some explanatory variables that are included in the research function: foreign direct investment, remittance inflow, inflation, and trade openness. The trade openness variable will represent for international trade of the economies. The research model is presented in the form as follows:

Table 11.1 Definition of the variables

Variable symbol	Definition	Unit	Source
GGDPPER	Growth of GDP per capita	%	World Bank
Public debt	Central government debt (% of GDP)	%	International Monetary Fund
Investment	Gross capital formation (% of GDP)	%	World Bank
Inflation	Inflation, GDP deflator (annual %)	%	World Bank
Remittances	Personal remittances, received (% of GDP)	%	World Bank
Openness	Calculated by the sum of exports and imports divided by GDP	%	World Bank

Source: Calculated from the research data

$$\begin{aligned} GGDPPER_{i,t} &= \varphi_0 + \varphi_1 Public\_debt_{i,t} + \varphi_2 Investment_{i,t} + \varphi_3 Inflation_{i,t} \\ &+ \varphi_4 Remittances_{i,t} + \varphi_5 Openness_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (11.1)$$

where GGDPPER is measured by the growth of GDP per capita, investment is the domestic investment, public debt is the rate of public debt in GDP, inflation is the inflation rate, remittance is the personal remittance, and openness is the trade openness which measures the international trade of the economy and $\varepsilon_{i,t}$ is the error term. Besides, t denotes time periods, and i is cross-sectional units with $i \in [1, N]$. Besides, we have a defined list of the variables which is shown in Table 11.1.

According to suggestions from economists, there is a technical problem which can make a bias in the estimation result. It is named the endogenous phenomenon between some variables in the function. Besides, the problem also leads to violating the assumptions of a good linear regression model. To solve this problem, the instrumental variables will be used to replace the endogenous variables in the function. The panel generalized method of moments (PGMM) is mentioned as a good choice to pass the endogeneity in the econometric model (Arellano & Bover, 1995). Besides, the pooled, fixed-effect, and random effect models are continuously used for estimated progress.

Following the comments of Vella and Verbeek (1999), the instrumental variables will replace the endogenous variables in the econometric function by their lag values. After that, the PGMM regressions will help the estimated results which are good information for the policymakers in the future. In our paper, three estimated models will be regressed with the PGMM technique to analyze the real impact of public debt on economic growth in the case of emerging economies.

2.2 Data

Our paper uses an annual data form which is collected in the period of 1980–2015. The study sample has 12 emerging countries including Bangladesh, Egypt, India,

Indonesia, Iran, Mexico, Nigeria, Malaysia, Pakistan, the Philippines, Thailand, and Vietnam. The data of the growth rate of GDP per capita, investment, and inflation are directly downloaded from the World Development Indicators database of the World Bank. The data of trade openness is calculated by the sum of export and import value divided by GDP in the same period. Finally, public debt information is sourced from the International Monetary Fund. The short description of the variables is shown in (Table 11.2).

3 Results

Following the introduction of our methodology, the PGMM technique is applied to three models including pooled, fixed-effect, and random effect models. The dependent variable is the growth of GDP per capita which is a proxy of economic growth. Besides, there are five independent variables including public debt, domestic investment, inflation, remittance inflows, and trade openness. However, we can see that all of the estimated results are in the same direction. The estimated results are presented in Table 11.3.

First of all, the most important issue is the coefficients which show the real impact of public debt on economic growth. All of the estimated results indicate that public debt has a positive impact on economic growth in emerging countries for the study period. In detail, the coefficient result of the fixed effects is statistically significant at 1% level, the random effects at 5%, and the pooled result at 10%. Thus, our result is a robust evidence of the positive role of public debt in promoting economic growth. However, this result may be true only for the emerging countries in our study sample. Besides, our estimated result is supported by previous studies (e.g., Jayaraman & Lau, 2009; Pescatori et al., 2014; Lopes da Veiga et al., 2016). The positive result of public debt on economic growth in emerging countries may come from the ability to use capital effectively in this group of countries. Due to the achievement of sustaining high long-term economic growth for decades, emerging countries have been able to transform the shortage of capital from debt by borrowing from outside. This research result is good for emerging countries but not necessarily in developing countries in general.

Besides, the research results confirm that domestic investment has a positive role in economic growth. The estimated coefficients of all three models are statistically

Table 11.2 A statistical summary of the variables

Variable	Max	Min	Mean	Std. dev.	Obs
GGDPPER	18.306	−24.461	2.6221	4.0174	427
Public debt	279.49	3.6734	41.530	26.068	370
Investment	89.381	11.367	26.488	9.4850	424
Inflation	219.00	−2.1982	11.615	17.050	409
Remittances	14.583	0.0048	3.2746	3.2204	388
Openness	220.40	9.1358	61.949	43.992	425

Source: Author calculates from the research data

Table 11.3 The PGMM estimation results

Dependent variable: growth of GDP per capita (GGDPPER)			
Variable	Pooled	Fixed effects	Random effects
Public debt	0.203* (1.940)	0.052*** (3.014)	0.024** (1.992)
Investment	0.119*** (5.416)	0.104*** (3.999)	0.119*** (5.059)
Inflation	−0.063*** (−3.826)	−0.046*** (−2.228)	−0.049*** (−2.728)
Remittances	0.140** (2.175)	0.608*** (5.273)	0.251*** (3.263)
Openness	0.003 (0.860)	−0.016* (−1.781)	0.001 (0.374)
Constant	−1.013 (−1.112)	−2.110* (−1.689)	−1.588 (−0.1566)
R-squared	0.1813	0.2330	0.1355
Observations	315	315	315

Note: *, **, and *** are significant at 10%, 5%, and 1%. The t-statistical values are in parentheses below the coefficients
Source: Author calculates from the research data

significant at 1% level, indicating the robustness of the estimated results. The results of our research are reinforced by previous studies (e.g., Adams, 2009). Thus, policymakers in emerging countries need to continue to promote domestic investment as a major driver of economic growth. In addition, remittances also have a positive impact on economic growth in emerging countries during the study period. The regression coefficients are statistically significant with all three estimates. Thus, the research results also confirm that remittances are an important financial resource to supplement the capital for promoting economic growth in emerging countries. Our evidence is also associated by some previous results, for example, the result of Giuliano and Ruiz-Arranz (2009). This is important information for policymakers in the context of remittance being the second largest source of capital, after foreign direct investment, in the developing countries worldwide.

Furthermore, the results show that inflation is a negative variable for economic growth in emerging countries over the years. The effect of inflation on economic growth is quite robust when the regression coefficients are statistically significant at 1% level. Thus, policymakers need to be cautious in regulating the general price level of the economy because this variable can seriously harm economic growth in emerging countries. The harm effect of inflation on economic growth has been pointed out by other researchers (e.g., Gylfason & Herbertsson, 2001; Giuliano & Ruiz-Arranz, 2009; Lopes da Veiga et al., 2016).

Finally, the impact of trade openness on economic growth is quite faint. In detail, regression coefficients of two pooled and random effect estimates are positive; however, the results are not statistically significant. The coefficient of the fixed-effect estimate is negative with a 10% level of statistical significance. Thus, our results cannot conclude about the role of international trade in promoting economic growth in the emerging economies. This can be explained by a large number of

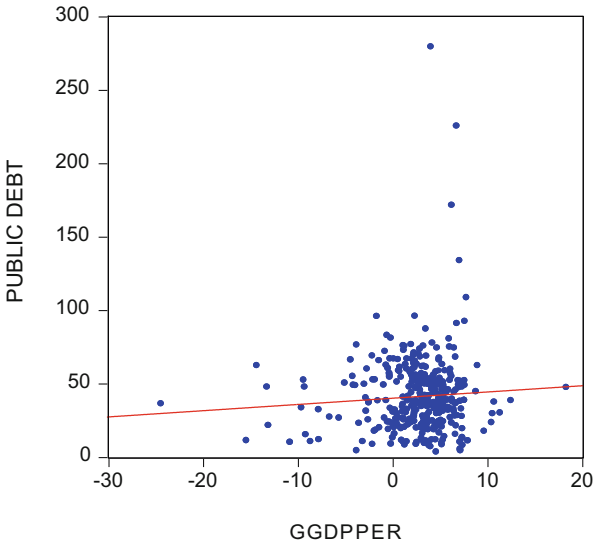

Fig. 11.1 Correlation between public debt and economic growth *(Source:* Author calculates from the research data)

emerging countries that have faced trade deficits in the previous years. For example, there are nine economies in our research group (including 12 economies) that have had trade deficit in the year 2005. Therefore, the result of our study is a noteworthy indicator when it shows that trade openness can harm economic growth in emerging countries during the study period.

In order to further illustrate the quantitative results in the above part, a scatter plot is drawn based on our research data. In particular, the vertical axis represents the ratio of public debt to GDP, and the horizontal axis paints the growth rate of GDP per capita in the same period. In addition, a linear regression line is drawn to illustrate the relationship between the two variables. The scatter plot clearly shows a positive relationship between the ratio of public debt to GDP and the growth rate of GDP per capita in emerging countries for the study period. The graph is completely consistent with the result of quantitative analysis by PGMM in the previous section (Fig. 11.1). Therefore, we can conclude that public debt has a positive impact on economic growth in emerging countries during the study period.

4 Conclusions and Policy Implications

Our paper maybe is one of the first studies using emerging countries to analyze the impact of public debt on economic growth. The research sample is collected based on the emerging countries' group ranked by Goldman Sachs consisting of nine countries in the period 1980–2015. Our result shows that public debt has a positive impact on economic growth during the study period. In addition, domestic investment and remittances also have positive impacts on economic growth. However,

inflation is a harmful variable that has negatively affect economic growth in these countries. Finally, trade openness has a negative impact on economic growth, which can be explained by the trade deficit phenomenon in many countries in the sample.

Following the research results, policymakers in emerging countries should continue to use public debt as a financial tool to promote economic growth. However, in this group of countries, the average value of the public debt ratio is 41.5% of GDP, a relatively high level. In addition, a more important aspect is to improve the efficiency of using public debt. This is an important issue to enhance the role of public debt in promoting economic growth. Next, policymakers need to continue to stimulate domestic investment flows as well as attract more remittances. They are very effective financial sources for boosting economic growth; however, they do not increase debt burdens as well as pressure to repay the economy. Finally, the solutions help to curb inflation as well as balance international trade that are necessary to sustainably develop the economies of emerging countries in the coming time.

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Chapter 12
Factors Affecting Depositors' Behavior at Commercial Banks in Northern Vietnam

Le Trung Thanh and Vu Thi Phuong Thao

Abstract This study evaluates the impact of factors affecting depositors' behavior at commercial banks in Northern Vietnam. The research uses data by surveying questionnaires collected from 1000 depositors at branches of Vietnamese commercial banks in Northern Vietnam to find out factors affecting people's saving habits as well as their behaviors when they received information about the financial crisis. The results show that age, sex, education, and marital status influence the behavior of depositors. And after receiving unfavorable information about the financial market, the more the money sender trust the official sources of information, the less they tend to withdraw their money.

Keywords Behavior · Depositors · Commercial banks · Financial crisis

1 Introduction

Mobilized capital has a decisive meaning, and it is the source for the bank to carry out lending, investment, reserving, etc. that bring profits for the bank. In order to obtain this capital, the bank needs to conduct capital mobilization activities, in which capital mobilized from deposits accounts for a particularly important role.

In the world, the phenomenon of a bank run (a large number of people withdraw their money from a bank because they believe the bank may cease to function in the near future) is not rare and causes serious consequences. Normally, these cases stem from the suspicion of people with bank liquidity. This suspicion may stem from an accurate analysis of the economic and financial situation but may also stem from the

L. T. Thanh (✉)
VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam
e-mail: ltthanh@vnu.edu.vn

V. T. P. Thao
Thuyloi University, Hanoi, Vietnam

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combination of rumors and herd psychology (Nagaoka & Takemura, 2009). Therefore, studying the behavior of depositors based on the theory of behavioral finance will help banks have appropriate policies to mobilize capital effectively and ensure liquidity for the whole system.

In the world, many types of research on the behavior of choosing a bank for transactions have been made. The most representative study of the bank selection model is the model of five elements of Anderson Jr. et al. (1976). They argued that the five main factors affecting the decision of choosing a bank include a recommendation from friends, the bank's reputation, bank credit, bank staffs' attitude, and transaction fees. Martenson (1985), Ta and Har (2000) showed that recommendations from friends and parents are extremely important factors in choosing a bank. Later, Laroche et al. (1986) and Ying and Chua (1989) presented the concept of banking services and identified the factors affecting depositors' decision in choosing the banks. Other studies also showed that other criteria such as convenience (including location and quality of service) are also important in selecting a bank (Dupuy & Kehoe, 1976; Thwaites & Vere, 1995).

Analyzing selection criteria of retail banking in the UK, through survey, Devlin (2002) thought that financial knowledge affected customers' choice of banks. Specifically, customers who have limited financial knowledge tend to choose banks following their position or recommendation from friends and relatives, while the group of people with better financial knowledge is interested in banking services, profit rate, and interest rate. This conclusion is not in line with the study of Lee and Lou (1996) when they argued that factors outside the bank had more impact on the group of customers with higher financial literacy. And family relationships are more important for financially literate groups because they tend to talk openly on such issues with family members.

Yada (2008), Yada et al. (2009), and Washio et al. (2008) built a model of a bank operating during the financial crisis with three main causes (system errors, bank scandals, and natural disasters). The authors estimated the total amount of money that customers withdraw at a bank when the depositors suspect their bank's solvency, and they found the factors affecting the depositors' behavior include the position as well as the action of big depositors on that bank.

Takemura and Ukai (2008) modeled the decision-making process, in which depositors are determined whether or not to withdraw their deposits after receiving uncertain information about the financial market. In particular, Takemura and Kozu (2009) conducted a survey covering 1500 depositors, who believe that depositors' behavior is influenced by magazine, the Internet, and conversations with friends or colleagues. Besides, depositors' behavior is also affected by personal characteristics of depositors such as their gender, education, and income.

Krisnanto (2011) studied the bank's customer selection factors including creditworthiness, credit quality, bank staffs' attitude, interest rates, positions, and some secondary factors such as a friend's recommendation and advice from family members.

In Vietnam, the authors mainly use survey methods when they focus on the factors affecting the fluctuation of deposit. Le (2011) studied depositors' behavior

through a survey of 904 customer questionnaires. According to the author, there are three factors that affect depositors' behavior: customer care policies, employees, and simple procedures. Truong et al. (2015) studied the impact of financial knowledge on the decision to send money from farmers in An Giang Province. The data used in this study were collected from a questionnaire with 398 people. The probit estimation results show that farmers' financial knowledge is positively correlated with their decision to deposit money into local commercial banks with the control of elements of the characteristics of the family. The results of this study imply that in order to increase capital mobilized from farmers, commercial banks should have programs to improve their financial knowledge. Le and Tran (2016) studied the factors affecting the decision to choose a savings deposit bank in Tuy Hoa and Phu Yen cities, including safety, convenience, service quality, financial benefits, and promotion form. The influence of related people is positively related to the choice of bank. Hoang (2017) studied the factors affecting the decision to choose the savings deposit bank of individual customers in Hue through survey data of 267 individual customers in Hue. The results show that there are six factors that positively affect the decision to choose a bank, which comprise brand reputation, financial benefits, the influence of relatives, marketing, employees, and the facilities. Nguyen et al. (2016) studied the behavior of depositors in the Vietnamese banking system, including depositors' saving habits, their understanding of deposit insurance, and research model of depositors' behavior in the Vietnamese banking system in the 2007–2013 period. Since then, the authors propose many solutions to consolidate the trust of depositors to maintain stable deposit growth, contributing to the stability of the banking system.

Thus, research on depositors' behavior in the world as well as in Vietnam is quite common. However, research on their behavior when receiving adverse information about the financial market in general and the banking system, in particular, is still small. Therefore, the study focused on investigating factors affecting depositors' behavior as well as their behavior on their deposits when there is information about the financial crisis.

2 Methodology

2.1 Data Processing

Logical regression models are widely used to build decision-making models in the fields of psychology, society, economy, and economic management. In particular, the probability of occurrence is p, with logit distribution in logit form (p) = log (p/1−p).

In this study, the author uses a model that has been applied by Toshihiko Takemura and Kozu (2009) in "An empirical analysis using individual data collected through a Web-based survey."

2.1.1 Independent Variables

In the model, the sender withdraws all deposits after receiving adverse information about the financial market and the bank they deposit, which represents the depositors' behavior. The probability that the sender withdraws all deposits after receiving adverse information about the financial market and the bank they deposit is p.

The explanatory variables for this probability are concretized into gender, age, educational level, living area, marital status, average income, reliability of the information, frequency of access, information of depositors, and understanding of deposit insurance.

The relationship between the independent variable and the dependent variable through the formula

$$\log\ (p/1-p) = a + b\_1\ X\_1 + b\_2\ X\_2 + b\_3\ X\_3 + b\_4\ X\_4 + b\_5\ X\_5 + b\_6\ X\_6 + b\_7\ X\_7$$

in which:

p = 1 if the sender withdraws all the money

0 otherwise

2.1.2 Dependent Variable

X1 Variable: Gender

X1 = 1 if the depositor is male

= 0 otherwise

X2 Variable: Age

The depositors are divided into three groups: the group under 30 years old (those who start working and do not have many accumulated assets), groups from 30 to 60 years old (those who have worked for a while, have stable jobs, and have accumulated assets), and group over 60 years old (those who are at retirement age, have accumulated assets, but are no longer working so income is reduced).

To perform the evaluation of differences between groups, we add dummy variables X2A and X2B:

X2A = 1 if the depositors are from 30 to 55 years old for women and from 30 to 60 years for men.

= 0 otherwise

X2B = 1 if depositors are over 55 years old for women and over 60 years for men.

= 0 otherwise

X3 Variable: Education

The education variable is divided into three groups: the group with high school graduation or lower, the group graduating from university, and the group graduating from graduate school.

To perform the evaluation of differences between groups, we add dummy variables X3A and X3B:

X3A = 1 if depositors belong to university graduates.
= 0 otherwise
X3B = 1 if depositors belong to a graduate group.
= 0 otherwise

X4 Variable: Marriage Status

Marriage status expresses the different reaction between single and married depositors when they receive adverse information about the financial market and the bank where they deposit.

X4 = 1 if the depositor is married
= 0 if the depositor is single.

X5 Variable: Average Monthly Income

The monthly average income variable is divided into five groups: the group with income below five million, the group from five million to ten million, the group from ten million to under 15 million, the group from 15 million to 20 million, and the group from 20 million above.

In order to assess the differences between groups, we put the fake variable X5A, X5B, X5C, and X5D.

X5A = 1 if depositors are in the group of five million to ten million.
= 0 with other cases
X5B = 1 if depositors belong to groups of ten million to under 15 million.
= 0 with other cases
X5C = 1 if the depositors belong to the group from 15 million to 20 million.
= 0 with other cases
X5D = 1 if depositors are in the group of 20 million or more.
= 0 with other cases

X6 Variable: Reliability of Information Source

We assume television, newspaper, e-newspaper, the Internet, email, phone from friends, information from neighbors, and information from people at work as the sources of information that depositors receive from their surroundings. In particular, the X6A variable represents the source of information from television, newspaper, and electronic newspaper and is considered to have higher reliability. And the X6B variable represents the source of information from email, from phone friends, from neighbors, from the workplace, and from the Internet and is considered to have a lower level of confidence.

The reliability of the information is divided into five levels: (1) I never trust the information source; (2) I do not trust it; (3) sometimes I trust it, and sometimes I do not trust it; (4) I trust it; and (5) I strongly trust it.

X7 Variable: How Often to Update Information

Turning information updates regularly tells us the different responses between never-updated depositors and those with updated information about financial market and the banks they send deposits.

This variable receives a value of 1 if the sender is updated and receives a value of 0 if the depositor is not updated.

2.2 Data Collection

Data source: The author collects data by directly surveying depositors through questionnaires at commercial banks in Northern Vietnam.

2.2.1 Survey Content

Survey contents need to study the following basic issues:

- Factors affecting the behavior of depositors.
- The behavior of depositors to their deposits when there is information about the financial crisis.

2.2.2 Scope of the Survey

A sample size of the survey: 1000 observations. The number of survey samples is divided according to the locations of bank branches in Northern Vietnam (Table 12.1).

3 Results

Through surveys, most depositors can choose to send savings at one to two banks. Specifically, 54.6% of respondents only send money at one bank, and 29% choose to deposit money at two banks. The number of depositors who deposit money at five banks or more is only 2.4%. Through the table below, it can be seen that single people tend to prefer to send at one bank and married people tend to send at more than two banks more than single people (Table 12.2).

Table 12.1 Allocating the number of surveyors to depositors in the northern regions of Vietnam

Scope of the survey	Number of samples
Ha Noi	100
West north	200
East north	300
Red river Delta	400
Total	1.000

Source: The authors' calculations

Table 12.2 Statistics of the number of banks sending customers

		Number of banks currently sending money						
		1	2	3	4	5	>5	Total
Marital status	Single	154	55	22	13	1	2	247
		62.3%	22.3%	8.9%	5.3%	0.4%	0.8%	100.0%
	Married	392	235	57	34	13	22	753
		52.1%	31.2%	7.6%	4.5%	1.7%	2.9%	100.0%
Total		546	290	79	47	14	24	1000
		54.6%	29%	7.9%	4.7%	1.4%	2.4%	100.0%

Source: The authors' calculations

Table 12.3 Statistics of priority depositors

		Factors affecting the choice of depositors					
		Banks' prestige	Attractive interest rate	Position	The attitude of bank staffs	Others	Total
Gender	Male	384	158	63	51	6	662
		58.0%	23.9%	9.5%	7.7%	0.9%	100.0%
	Female	166	98	48	25	1	338
		49.1%	29.0%	14.2%	7.4%	0.3%	100.0%
Total		550	256	111	76	7	1000
		55.0%	25.6%	11.1%	7.6%	0.7%	100.0%

Source: The authors' calculations

Being asked about the factors affecting the choice of depositors' saving forms, up to 51% of respondents selected safety as the leading factor they were interested in when choosing saving forms, followed by the profitability. Therefore, the bank's prestige factor is also the first priority factor of depositors in choosing banks to deposit money (55%), followed by interest rates. The bank's position and the bank's staff attitude are the next two factors. However, when considering the two-way relationship between the factors of bank selection and the gender of the depositors in this survey sample, it can be seen that female depositors tend to prioritize the choice of reputable banks, while male depositors tend to prefer attractive interest rates and closer to home (Tables 12.3, 12.4, and 12.5).

Significant variables: X2A, X2B, X6A, and X7 at 5% significance level.

The variables do not make sense: X1, X3A, X3B, X4, X5A, X5B, X5C, X5D, and X6B at 5% significance level. However, X3A and X4 variables are significant at the 10% level.

The coefficient McFadden R-squared is 0.097683, meaning that the variables in the model explain 9.77% of the variation of the dependent variable.

The p-value of the coefficient LR equal to 0 indicates that the general model is statistically significant.

Table 12.4 Description of model variables

	Y	X1	X2A	X2B	X3A	X3B	X4
Mean	0.5989	0.4256	0.6783	0.0792	0.6389	0.1347	0.801
Median	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000
Maximum	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Minimum	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Std. dev.	0.5271	0.6342	0.5168	0.2974	0.4276	0.3645	0.4086
Skewness	−0.5983	0.7032	−0.5874	3.0236	−0.7424	2.3788	−1.296
Kurtosis	1.4985	1.5052	1.345	9.2986	1.4327	6.621	2.8160
Jarque-Bera	169.45	176.07	173.5	3207.4	171.04	1502.8	288.44
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sum	646.00	335.00	638.0000	89.000	634.00	115.00	769.00
Sum sq. dev.	229.15	219.53	230.750	80.4	229.09	103.06	175.52
Observations	996	1000	997	997	998	998	1000

Source: The authors' calculations

Table 12.5 Logit regression results

Variable	Coefficient	Std. error	z-statistic	Prob.
X1	0.258045	0.160325	1.609512	0.1178
X2A	−0.423455	0.206855	−2.047110	0.0403
X2B	−0.691812	0.320430	−2.159011	0.0256
X3A	0.345823	0.179022	1.931735	0.0709
X3B	0.305564	0.259855	1.175902	0.2555
X4	0.365886	0.196683	1.860283	0.0800
X5A	0.159422	0.243492	0.654732	0.4723
X5B	−0.220641	0.248420	−0.888177	0.3955
X5C	−0.238262	0.308744	−0.771713	0.4382
X5D	0.062249	0.305418	0.203815	0.8187
X6A	0.199899	0.100146	1.996076	0.0281
X6B	0.115302	0.103553	1.113454	0.2655
X7	1.141707	0.186764	6.113100	0.0000
C	−1.968148	0.431341	−4.562864	0.0000
Observation	1000			
Log-likelihood	−569.4626			
LR statistic	136.9728			
McFadden R2	0.097683			

Source: The authors' calculations

The coefficients in the model do not mean that the marginal contribution of that variable is negligible. The coefficients in the model are significant, and the marginal contribution of that variable is explained as follows:

- The X2A variable with an estimated coefficient of − 0.42 means that depositors from the age group 30 to 55 years for women and 30 to 60 years for men tend to withdraw more money than the group under 30 years old. More specifically, with other variables constant, the proportion of depositors in the age group from 30 to 55 years for women and from 30 to 60 years for men compared to other groups is exp. (0.42) = 1284. That means the ability of women to withdraw money from the age of 30 to 55 years for women and 30 to 60 years for men is 28.4% higher than for other groups.
- X2B variable with an estimated coefficient of −0.69 means that depositors over 55 years of age for women and over 60 years for men tend to withdraw more money than those under 30 when receiving adverse information about financial markets and the banks they deposit money.
- The X6A variable with an estimated coefficient of 0.19 means that when receiving unfavorable information about financial markets and depositors' banks, depositors are more confident of official sources of information (television, paper newspapers, electronic newspapers) and tend to withdraw less money.
- The X3A variable has an estimated coefficient of 0.35, meaning that depositors of college graduates tend to withdraw less money.

	Y	X5A	X5B	X5C	X5D	X6A	X6B	X7
Mean	0.7248	0.397	0.2411	0.0897	0.0945	3.2501	2.9906	0.8115
Median	1.0000	0.0000	0.0000	0.0000	0.0000	3.0000	3.0000	1.0000
Maximum	1.0000	1.0000	1.0000	1.0000	1.0000	5.0000	5.0000	1.0000
Minimum	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000
Std. dev.	0.3775	0.5062	0.4232	0.2952	0.2943	0.8768	0.7638	0.3985
Skewness	−0.6350	0.2524	1.4047	2.6253	2.8634	−0.2260	−0.1611	−1.7223
Kurtosis	1.4118	1.1655	2.8476	8.5186	8.7352	3.5387	4.5018	3.593
Jarque-Bera	173.46	167.64	341.30	2508.3	2589.1	19.205	90.769	467.32
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sum	645.00	435.00	221.00	98.000	96.000	3245.0	2902.0	817.00
Sum sq. dev	225.17	246.03	170.2	88.124	86.075	771.2	597.86	149.97
Observations	998	998	1000	1000	998	998	997	1000

Source: The authors' calculations

– The variable X4 has an estimated coefficient of 0.36, meaning that the depositors of the married group tend to withdraw less money. More specifically, with the condition that other variables remain unchanged, the proportion of depositors in married groups compared to unmarried groups is exp. (0.36) = 1233. That means the ability of the married group to withdraw money is less than 23.3%.

4 Conclusions

First, the model uses the factors including gender, age, educational level, marital status, average income, reliability of the information, and frequency of access to information of depositors, which are able to explain the behavior of depositors.

Second, the depositors' behavior is measured by the response of depositors who will withdraw all deposits after receiving adverse information about the financial market and the bank or not.

Third, the results from the model have shown the important factors of depositor behavior. From these findings, relevant parties can provide appropriate policies to protect depositors and stabilize the amount of money mobilized from the population.

Fourth, with 5% significant level, the factors affecting the withdrawal of depositors are explained as follows:

– Depositors aged from 30 to 55 years for women and from 30 to 60 years for men tend to withdraw more money than depositors under 30 years old. Specifically, provided that other factors remain unchanged, when they receive adverse information about the financial market and the banks, the proportion of depositors aged from 30 to 55 years for women and from 30 years to 60 years of age for men who are able to withdraw money higher than those under 30 years old.
– Women over 55 years and men over 60 years tend to withdraw more money than the group under 30 years when receiving adverse information about the financial market and their bank.
– Depositors with a bachelor degree tend to withdraw less money than new depositors with high school diploma or below.
– Depositors from married groups tend to withdraw less money than unmarried depositors. Specifically, provided that other factors remain unchanged, when receiving adverse information about the financial market and their bank, the proportion of married depositors is likely to withdraw less than the unmarried group by 23.3%.
– When receiving adverse information about the financial market and their banks, the more the money sender believes in the official sources of information (television, newspaper, electronic newspaper), the less chance they tend to withdraw their money.
– The remaining factors such as gender and the average income of depositors do not affect the withdrawal and deposit of depositors.

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Chapter 13
Determining the Impact of Financial Development on the Environment Based on Biquadratic Equation in ASEAN Countries

Thanh Trung Le, Khuong Nguyen, Anh Phan, Quang Vu, and Lien Vu

Abstract This study explores the impact of financial development in reducing degradation during the process of economic development and international trade in ASEAN countries. A new approach based on biquadratic equation was implemented in period of 24 years from 1990 to 2014, using panel ARDL method to examine the factors. Outcomes of the research indicate a positive contribution of financial development in the long term in countries such as Cambodia, Indonesia, Malaysia, The Philippines, Singapore, Thailand, and Vietnam. Financial development helps to reduce negative impact of increasing emission from factors such as fuel and renewable energy consumption, foreign direct investment, economic growth, and trade openness. This implies that enhancing credit to private sector helps to allocate resources effectively and reduce negative impact to the environment.

Keywords Environmental Kuznets curve hypothesis · Pollution haven hypothesis · Financial development · CO_2 emission · Biquadratic equation

T. T. Le (✉)
VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam
e-mail: ltthanh@vnu.edu.vn

K. Nguyen
Thaibinh Department of Finance, Thai Binh, Vietnam

A. Phan
Banking Academy, Hanoi, Vietnam

Q. Vu
Hanoi Pedagogical University 2, Hanoi, Vietnam

L. Vu
State Audit Office of Vietnam, Hanoi, Vietnam

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1 Introduction

The issue of environmental pollution is attracting more and more attention from countries all around the world. Governments desire to pursue sustainable development policy, which can boost the economy while minimizing environmental pollution. Important policies such as using green and renewable energy, economic management, investment, and partnership are studied and proposed.

Research shows that the relationship between economic development and environment follows the inverted U shape in the environmental Kuznets curve—EKC (Kuznets, 1955). This hypothesis illustrates that income intensifies pollution up to a certain level; after that, it restrains environmental degradation. Other studies provided N shape to explain that, at very high-income levels, the scope of economic activity is broaden; therefore, negative impact on the environment cannot be rebalanced (Grossman & Krueger, 1995). However, some other researches considered to replace income by trade openness (TRADE) (Jayanthakumaran et al., 2012; Akın, 2014). This commences standpoint that the influence of these factors on the environment focuses on two channels. Initially, they will increase demand for energy and natural resources, so they enlarge emissions (positive relationship). After that, by promoting advanced technology, they will reduce environmental pollution (negative relationship).

A common feature of those studies is they will establish an equation in which GDP^2 or $TRADE^2$ coefficients describe nonlinear relationships. When it is negative and statistically significant, we can confirm the existence of EKC and determine an extreme point; after that, increasing GDP (TRADE) can reduce emissions. Other factors are also added in the model as proposed by Lau et al. (2014), who affirmed that the relationship between GDP and CO_2 emissions was only expressed when adding two variables such as foreign direct investment and trade openness. In addition, Ang (2007) and Chen and Huang (2013) realized economic growth affected environment through energy consumption, etc.

Compared with previous researches, we also choose energy consumptions (EC), renewable energy consumptions (REC), foreign direct investment (FDI), income per capita (GDP), and trade openness (TRADE). However, we choose financial development (FD) to play a major sector for ASEAN countries from 1990 to 2013, instead of GDP or TRADE.

The main difference in this study is that we will establish a biquadratic equation with assumption that balance will not auto-recover immediately. Financial development continuously enlarges emission once again before decreasing degradation at the end of process. In addition, our aim is to verify whether financial development helps to reduce damage from energy consumptions, foreign direct investment, etc. through a multiplication between them. We combine an autoregressive distributed lag (ARDL) model with pooled mean group (PMG) estimation in Eviews 9.0 software. This has led to new discoveries about the relationship between financial development and environment. (1) Our results showed an evidence of inverted W graph that implies the relationship occurs sequentially positive-negative-positive-

negative. Financial development increases pollution initially, up to a certain level (first extreme point); it reduces emission, down to a certain level (second extreme point); it continuous broaden degradation; and after that, it reduces pollution (at third extreme point). (2) We also show that financial development has contribution in decreasing the influence of other factors on environment for ASEAN countries. This encourages developing countries in general and ASEAN members in particular to prioritize financial resources for the private sector in order to achieve economic efficiency and reduce negative effect on environment.

The remainder of this study is organized as follows: Section 2 reviews the relation between CO_2 emissions and other factors. Section 3 presents data collection and methodology. The empirical results are shown in Sect. 4. Section 5 concludes the study.

2 Literature Reviews

As introduced in Sect. 1, empirical studies on the relationship between economics and environment based on the EKC theory mainly focus on two topics: (1) determine if relationship complies with the inverted U shape as Ang (2007) and Jalil and Mahmud (2009) and (2) calculate transition thresholds as environmental quality improves following the increase in per capita income. It means that we can reduce degradation by improving income (Kuznets, 1955). However, Lacheheb et al. (2015) indicated it does not exist in Algeria and Farhani and Ozturk (2015) deny it in the case of Tunisia.

When discussing about financial development, most of the studies agree that it not only stimulates economic growth but also acts as an important determinant of the quality of the environment, including positive and negative relationship.

1. In positive ways, financial development increases CO_2 emissions that was found in Sadorsky (2010), Acaravci and Ozturk (2010), and Bouttabba (2014). According to Omri et al. (2015), stock market development helps listed enterprises to lower financing costs and increase financing channels. This enables firms to invest in new projects and expand scale, which promotes the usage of natural resources and spread pollution. On another hand, financial development may attract FDI (Desbordes & Wei, 2014) and international trade. It encouraged country to improve its economic performance, including strengthening investment, trade cooperation, etc., which affects indirectly on environmental degradation (Phimphanthavong, 2014).
2. In a negative way, a high level of financial development has given many governments access to new and cheaper sources that can afford investment in technical innovation and advanced technology to decrease emissions. In addition, countries could save a large amount of money because of not having to pay expenditure for environmental protection since much of activities are the duty of public sector. Some results showed that financial development reduces emissions

in countries as Middle East and North Africa (MENA) (Omri et al., 2015) and Indonesia (Shahbaz et al., 2013). Financial development not only contributed on economic growth of Tunisia (Farhani & Ozturk, 2015) but also reduced energy consumption in Malaysia (Islam et al., 2013) and degradation in both short and long terms in Pakistan (Shahbaz et al., 2011).

Moreover, environmental protection activities are also required in the investment of private firms through environmental standards, output products consumed in developed countries, facilitating Capital mobilization, and risk sharing. It led to a conclusion that through improving governance, financial sector development can spur greater environmental performance. This indicates that well-developed financial system may provide enough incentive for firms to lower their CO_2 emission. On another hand, companies' revenue will be affected strongly when they cause environmental violations, because people can boycott their goods. Investors on the Korean Stock Exchange strongly react to the disclosure of such news of companies in Korea not complying with Korean environmental laws and regulations. The firms' capitalization or firm's market valuation will be decreased (Dasgupta et al., 2006).

Besides determining the existence of curve, studies also attempt to explain linear relationship. For example, Apergis and Payne (2009), Mercan and Karakaya (2015), and Ali et al. (2015) show a positive impact of energy consumption on emissions. According to Odhiambo (2009), energy consumption promotes economic expansion and financial development. This also makes sense with developed countries where financial indicators make the significant contribution to total GDP (Al-Mulali & Sab, 2012). However, it also generates a large proportion of CO_2 emissions, one of the main causes of global warming. Hence, some organization supports renewable energy. According to data aggregated by the International Panel on Climate Change (IPCC, 2011), life cycle global warming emissions associated with renewable energy including manufacturing, installation, operation and maintenance, and dismantling and decommissioning are minimal. There was also an evident decrease of CO_2 emissions per capita (Silva et al., 2012). Attiaoui et al. (2017) provided the long-run PMG estimates showed that non-renewable energy consumption and gross domestic product increase CO_2 emission (CO), whereas REC decreases it. Meanwhile, Apergis et al. (2010) suggested that it did not contribute to reduce CO_2 emissions in the short run. In G7 countries, renewable energy consumption increases both GDP and CO_2 emissions in the long term (Sadorsky, 2010).

People supporting pollution deem with their own hypothesis that FDI is one of the main factors causing pollution. According to pollution haven hypothesis, in developed countries, highly expensive costs for waste management caused companies' tent to move production facilities to developing countries through international trade and FDI, which broadens pollution in these countries. Balibey (2015) indicated the positive relationship between FDI and CO_2 emission. Al-Mulali and Sab (2012) emphasized that FDI was the major cause of the expansion of CO_2 emissions in Middle Eastern countries. However, FDI also promotes technology transfer that will help to control pollution in the country receiving investment through environmental standards and output products. In fact, FDI contributes to boost economic growth

and energy consumption without raising CO_2 emissions in G20 countries (Lee, 2013) and BRICSAM (Khachoo & Sofi, 2014) and decreases CO_2 in Turkey (Ozturk & Oz, 2016). Kivyiro and Arminen (2014) defined both positive and negative effects of environmental pollution in Sub-Saharan Africa.

Last but not the least, by reallocating resources between more and less polluted sectors, trade openness affects directly CO_2 emissions (Jalil & Mahmud, 2009; Sharma, 2011; Lau et al., 2014). This finding is also identified in the case of Iran economy according to Bouttabba (2014). In contrast, Maji and Habibullaha (2015) provide evidence that trade liberalization encourages the change in production technology, enhances comparative advantages for developing countries, creates more financial resources to reduce pollution, and facilitates growth toward diversification in order to avoid excessive dependence on resource-based exports.

3 Methodology and Data

The main objective of this research is to analyze whether financial development reduces and determines if some identified factors reduce CO_2 emissions. To answer this question, we estimate Eq. (13.1) as follows:

$$\begin{aligned} CO = f\big(&FD^2, FD^4, EC, REC, FDI, GDP, TRADE, FD * EC, FD * REC, FD * FDI, \\ &\times FD * GDP, FD * TRADE\big) \end{aligned} \tag{13.1}$$

where CO is per capita of CO_2 emissions (metric tons per capita); FD, financial development, which is represented by domestic credit to private sector; GDP, per capita income (current US$); EC, per capita of energy consumption (kg oil per capita); REC, renewable energy consumption (% of total final energy consumption); FDI, foreign direct investments net inflow (BoP, current US$); and TRADE, trade openness, which is calculated as the ratio of the total value of exports and imports to total real GDP (%).

In Eq. (13.1), we consider FD follows two channels. Firstly, FD has a nonlinear relationship with environment. In previous studies, this relationship was illustrated by inverted U shape with a negative and statistically significant coefficient as GDP^2 or $TRADE^2$. However, we develop a biquadratic equation with expectation that the coefficient of FD^4 is negative and FD^2 is positive. The inverted W shape is described as follows (Fig. 13.1):

1. Initially, financial development improves economic development and boost using energy and natural resource. Hence, increasing it to enlarge degradation (positive relationship)
2. Next, financial development promotes advanced technology that helps to reduce environmental pollution (negative relationship). It has given many governments

Source: Author' assumption

Fig. 13.1 The inverted W shape between financial development and environment. Source: Author' assumption

access to new and cheaper sources to invest in technical innovation and advanced technology to decrease emissions

3. At middle-upper level, manufacturing cost is lower, which makes goods become cheaper and people consume more, increasing pollution (positive relationship)
4. At very high level, financial development can afford to have high technology, people set higher domestic environmental standards and output products, and emission decreases (negative relationship).

In the second aspect, all EC, REC, FDI, GDP, and TRADE have direct impact on emission, and they have linear relationship. We consider FD has a positive or negative effect on the polluting process of these factors through a multiplication between them. When the coefficient is negative or positive but smaller, it can be seen that FD has positive role for the environment.

3.1 Method Estimation

There have been many modeling techniques used in the case of single country or panel data of a group nation. In the first case, with some methods such as ordinary least squares (OLS) model, vector error correction model (VECM), and Johansen cointegration, the existence of hysteresis and constraints in the observed sample could affect the results of analysis; hence ARDL is chosen. It is a standardized least squares regression model that includes the latency of dependent variable as well as the explanatory variables in the model. In the second case, however, with panel data related to the separate effects, ARDL models may cause deviation problems by correlation between mean difference repressors and the error components. To solve this problem, we used pooled mean group (PMG) method proposed by Pesaran et al. (1999). It allows consideration of the coherent form of ARDL model and adjusts it with panel data by allowing for shear coefficients, short-term coefficients, and co-composition changes between variables.

3.2 Economic Model

$$\Delta Y_{it} = \varphi S_{it-1} + \sum_{j=1}^{p} \delta_{ij} \Delta X_{it-j} + \eta_i + \varepsilon_{ij} \text{ where } S_{it-1} = Y_{it-1} - \theta x_{it-1} \quad (13.2)$$

S_{it-1} is the variable arising from the long-term equilibrium at any time for group i (country), and φ is the correction factor (EC), which reflects the correction rate; vector θ reflects the long-term elasticity of CO_2 emission with explanatory variables (X). The short-term regression coefficient of the explanatory variables for CO_2 emission is expressed by the coefficient δ. Vector η_{it} is the unobserved error (country-specific, invariant over time), and the vector ζ_{it} is observable error.

Data are collected from the World Bank Indicator in the period 1990–2013 of ASEAN countries. ASEAN countries are selected because all member states (1) are low-income and middle-income countries and (2) cooperate in the pursuit of sustainable economic development and (3) their economic role is increasingly appreciated and plays an important role in the Asia-Pacific. To ensure model accuracy, we only select seven countries which have full indicators including Indonesia, Malaysia, Singapore, Thailand, The Philippines, Cambodia, and Vietnam.

4 Results

Table 13.1 and Appendix A reports summary statistics of the annual data. For each country, we have 24 observations for each variable. Combining seven countries, we have a total of 168 observations. Result of ADF test confirms that all variables are non-stationary at level but stationary at first difference, at the 5% level of significance.

According to Pesaran et al. (1999), the PMG estimator constrains the long-run coefficients to be identical but allows the short-run coefficients and error variances to differ across group. Result of panel cointegration test is presented in Table 13.2. At the significant level of 5%, we could reject null hypothesis of no cointegration and accept alternative hypothesis. All variables have cointegration so it is feasible to use Panel- ARDL model.

In the long-run equation, with the coefficient of FD^4 being negative and significant in Table 13.3, our result confirms an evidence of biquadratic equation. This implies that finance for private sector in ASEAN countries helps to reduce emissions. However, unlike the EKC, our result indicates that rebalance does not happen immediately. The economy will continue to enlarge pollution before the increase in credits helps to reduce pollution. In other words, the inverted U curve process will continue again.

Table 13.1 Results of statistical analysis

	CO	EC	FD	FDI	GDP	REC	TRADE
Mean	0.5150	6.8233	3.8202	21.0058	7.5966	2.8434	4.7758
Maximum	2.9507	8.9053	5.1150	24.9139	10.9263	4.4191	6.0860
Minimum	−1.9964	5.5230	0.8637	0.0000	4.5853	−1.6356	3.8180
Std. dev.	1.2959	0.9648	1.0090	4.0036	1.4479	1.6637	0.6013
Skewness	−0.1354	0.5214	−1.0534	−4.2948	0.4662	−1.3095	0.4943
Kurtosis	2.1764	2.0987	3.6097	22.9016	2.5829	3.4209	2.4271
Jarque-Bera	5.2609	13.2969	33.6705	3.288	7.3046	49.2515	9.1390
Probability	0.0720	0.0013	0.0000	0.0000	0.0259	0.0000	0.0104
Observations	168	168	168	168	168	168	168
ADF test I(0)	11.59	12.34	22.27	15.80	1.45	29.11	7.96
Prob.	0.63	0.57	0.07	0.32	1.00	0.01	0.89

Source: Calculation from World Bank Indicator

Table 13.2 Panel cointegration test

	Individual intercept		Individual intercept and individual trend		No intercept or trend	
	Statistic	Prob.	Statistic	Prob.	Statistic	Prob.
Panel PP-statistic	−9.077	0.00	−15.982	0.00	−2.894	0.00
Panel ADF-statistic	−2.011	0.02	−3.848	0.00	−1.030	0.15

Source: Author's calculation

Table 13.3 Results of estimation

Long-run equation			Short-run equation		
Variable	Coef.	Prob.	Variable	Coef.	Prob.
FD^4	−0.011	0.00	COINTEQ01	−0.494	0.04
FD^2	1.299	0.00	D(CO(−1))	0.015	0.93
EC	3.374	0.00	D(FD^4)	−0.046	0.18
FD*EC	−0.400	0.00	D(FD^2)	4.255	0.18
REC	1.200	0.08	D(EC)	7.742	0.17
FD*REC	−0.191	0.15	D(EC*FD)	−1.758	0.15
FDI	0.002	0.19	D(REC)	−3.450	0.65
TRADE	1.714	0.00	D(FD*REC)	0.378	0.84
FD*TRADE	−0.472	0.00	D(FDI)	−0.006	0.63
GDP	1.209	0.00	D(TRADE)	5.984	0.43
FD*GDP	−0.297	0.00	D(FD*TRADE)	−1.399	0.41
			D(GDP)	−2.486	0.20
			D(FD*GDP)	0.445	0.31
			C	−14.878	0.04
			Log likelihood	325.602	

Source: Author's calculation

Both EC and REC have positive impact on emission. An increase of 1% in EC leads to 3.374% emissions, higher than 1.200% of REC. It means that using renewable energy helps to reduce a large amount of CO_2 emission. Meanwhile, the coefficient of both FD*EC and FD*REC being negative means financial development reduces the demand for energy. This result is in contrast to Sadorsky (2010) and Bouttabba (2014). More domestic credit to the private sector facilitates them to innovate advanced environmentally friendly technologies to reduce pollution.

Trade openness and GDP also have positive relationship with emission. Each added percent of TRADE or GDP increases 1.714% and 1.209% environmental pollution. This is explained that almost country in ASEAN is low-middle income, except for Singapore and Thailand, has less commercial activities, mainly imported. Financial development has the effect of improving incomes and promoting export-oriented production, thereby contributing to the reduction of pollution. It can be seen that increasing credits and financial resources for commercial activities help to reduce 0.472% of emissions and for economic growth decrease emissions at

0.297%. This implies that increasing credit to the private sector helps achieve the goal of reducing environmental pollution.

5 Conclusion

By using panel ARDL, our research indicates that in biquadratic equation, financial development has good contribution on reducing emission. The result indicates a positive contribution of financial development in the long term in ASEAN countries. It helps to reduce the negative impact on increasing emission from factors such as fuel and renewable energy consumption, foreign direct investment, economic growth, and trade openness. This implies that enhancing credit to private sector helps to allocate resources effectively and reduce negative impact on the environment.

As our result, the extreme point at 203% gross domestic product, beyond that, increasing financial development would make degradation reduced. It still has a big gap for each country to reach this point. However, the impact of FD on other factors is significant, so it is important to continue to allocate financial resources to the private sector. In addition, by generating less influence to emissions, we support the usage of renewable energy as a green energy strategy for economic development and environmental protection.

Appendix A Short-Run Equation of Some Countries in ASEAN

Country	IDN		KHM		MYS		PHL		SGP		THL		VNM	
Variable	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
COINTEQ01	−1.348	0.00	0.031	0.00	−0.327	0.00	0.096	0.00	−0.101	0.00	−0.402	0.00	−1.406	0.00
D(CO(−1))	0.914	0.00	−0.087	0.03	−0.298	0.01	−0.193	0.00	−0.366	0.01	−0.002	0.91	0.136	0.01
D(FD^4)	−0.093	0.00	0.01	0.00	−0.014	0.00	0.01	0.00	−0.23	0.00	0.011	0.00	−0.015	0.00
D(FD^2)	5.917	0.34	−0.134	0.01	2.451	0.93	−0.885	0.29	22.107	0.72	−0.73	0.06	1.06	0.29
D(EC)	−9.8	0.32	1.872	0.01	13.263	0.91	7.493	0.66	37.222	0.85	4.969	0.45	−0.825	0.58
D(EC*FD)	1.975	0.04	−0.552	0.00	−2.734	0.63	−1.633	0.29	−8.113	0.42	−1.016	0.03	−0.231	0.03
D(REC)	21.711	0.65	−6.583	0.07	5.916	0.96	−6.183	0.25	−42.9	0.93	2.044	0.80	1.846	0.85
D(FD*REC)	−7.149	0.22	1.363	0.01	−1.33	0.83	1.59	0.02	9.352	0.69	−0.489	0.27	−0.689	0.33
D(FDI)	−0.001	0.00	−0.026	0.00	−0.014	0.00	0.011	0.00	−0.063	0.00	0.012	0.00	0.038	0.00
D(TRADE)	5.007	0.23	−0.031	0.66	−2.489	0.99	−5.311	0.20	50.457	0.95	−4.591	0.27	−1.157	0.03
D(FD*TRADE)	−1.59	0.02	−0.188	0.00	0.594	0.92	1.435	0.01	−11.26	0.78	0.971	0.01	0.245	0.00
D(GDP)	1.662	0.45	0.63	0.03	−1.639	0.94	−1.447	0.18	−13.16	0.79	−3.755	0.06	0.307	0.83
D(FD*GDP)	−0.609	0.05	−0.344	0.00	0.394	0.68	0.349	0.02	2.795	0.29	0.811	0.00	−0.28	0.12
C	−41.33	0.40	1.045	0.00	−9.66	0.52	2.88	0.55	−2.988	0.78	−12.13	0.22	−41.97	0.62

Source: Author's calculation

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Chapter 14
A Study on the Factors Affecting Intention of Using Online Banking Services in Vietnam

Van Phuc Le, Song Huong Do, and Hoang Ngoc Linh Nguyen

Abstract Online banking services have become a new type of banking service and been used widely. However, there is limited knowledge about consumer behavior in Vietnam because it is a complicated socio-technical phenomenon and involves many factors. Therefore, this study aims to analyze the main factors affecting the intention to use online banking services in Vietnam. The proposed research model is based on the extension of the technology acceptance model (TAM) with new factors including perceived risk, brand image, user innovativeness, and government support. Based on valid collection from 356 online banking users, the data were processed using SPSS including descriptive statistics, Cronbach's alpha, exploratory factor analysis (EFA), and regression analysis. The results show that perceived usefulness, perceived ease of use, brand image, user innovativeness, and government support have a positive impact on customers' intention to use online banking services, while perceived risk has a negative influence. These results can help online banking service providers implement their user development strategies as well as become references for related research in the future.

Keywords Commercial banks · Intention to use · Online banking services · Vietnam · TAM

1 Introduction

Online banking services, which are applied widely all over the world, have become an essential part of people's life (Katiyar and Badola 2018). Online banking services also play an important role in the banking industry (Salem et al. 2019). On the one

V. P. Le (✉)
University of Social Sciences and Humanities, Vietnam National University, Hanoi, Vietnam

S. H. Do · H. N. L. Nguyen
University of Economics, Hue University, Hue, Vietnam

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hand, online banking services contribute to reducing operating costs including human staff, facility investment, and transaction cost. Besides, online banking services give the manager a chance to boost productivity (Hernando and Nieto 2007). On the other hand, online services provide many kinds of banking services via the Internet (AlKailani 2016); thus, they help to save time and enhance the convenience for users (Vuong and Nguyen 2016). Furthermore, the application of online banking services brings significant benefits such as advancing service quality and widening market which lead to higher bank performance (Tarhini et al. 2016).

Over the past few years, more and more banks recognize the advantages of online banking service. In 1995, there was only 1 bank providing online banking services, but by the end of 2002, 6000 banks were applying online services (Claessens et al. 2003). Based on recent statistics, the number of mobile banking users, a form of online banking, exceeded 1.8 billion people, and 34% of retail banking is conducted through online services (UBS Evidence Lab 2015).

Vietnam, with a young and dynamic population structure, is favorable for the formation and development of Internet banking. The percentage of people using smartphones in urban areas is 84%, and in rural areas, it is 68% (Neilsen 2017). Until 2015, about 45 banks are providing online banking services, namely, SMS banking and Internet banking, and 32 banks develop mobile banking apps (Q&Me 2015). It is worth noting that Vietnam has a potentiality to develop online banking.

There is a growing body of literature that recognizes the importance of online banking services. More specifically, many pieces of research have been conducted in developing and emerging countries such as Palestine (Salem et al. 2019), Pakistan (Hassan and Awan 2017), India (Marakarkandy et al. 2017; Kumar and Madhumohan 2014), and Tunisia (Ben Mansour 2016). Besides, there are several studies carried out in developed countries, e.g., Greece (Giovanis et al. 2012), Finland (Pikkarainen et al. 2004), and Australia (Sathye 1999). Notably, most of the studies on the acceptability of online banking services took the technology acceptance model (TAM) as an analytical basis. However, in this study, we use the extended TAM by adding more relevant factors.

In Vietnam, though online banking services have made significant progress recently, few studies are discussing this issue comprehensively. Most of the current studies focus on online banking services of individual bank (Nguyen 2019) or target on a specific customer group (Nguyen et al. 2014) or are even based on a small sample size (Chong et al. 2010a, b).

The objective of this study was to explore factors affecting the intention to use online banking services in Vietnam, which provides a more comprehensive view of the research topic. From that, the paper proposes some solutions related to improving the quality of online banking services and implication regarding macro-administration policy.

The remainder of the paper proceeds as follows: Sect. 2 reviews the relevant literature and presents the main hypotheses; Sect. 3 describes the dataset and variables and highlights the econometric model; Sect. 4 presents the main empirical results; and Sect. 5 details the discussion, while Sect. 6 shows conclusion, limitations, and future research.

2 Literature Review

2.1 Technology Acceptance Model (TAM)

The technology acceptance model (TAM) is proposed by Davis et al. (1989) to predict the main factors that determine consumers' intention for using any new technology (Salem et al. 2019; Cham et al. 2018; Bailey et al. 2017) in many fields such as Internet banking, mobile banking, and telephone banking services (Patel and Patel 2018; Martins et al. 2014; Abbad 2013; Yang and Zhou 2011), social network (Kim 2012), digital library (Chen et al. 2016; Kapoor et al. 2014), and other business-related fields based on information technology platforms (Demoulin and Djelassi 2016).

The TAM supposes that the intention to utilize technology determined by perceived usefulness (PU) and perceived ease of use (PEOU) (Abdinoor and Mbamba 2017). Perceived usefulness is related to the level that the application of a specific technology will improve customers' performance (Davis et al. 1989), while perceived ease of use explains the degree which needs little physical and mental effort for users to use a system or technology (Al Khasawneh 2015). These factors are all linked to attitudes toward using online banking services (Salem et al. 2019).

Recent studies, using TAM as a theoretical framework, have proposed to remove attitude toward using from the model, because perceived usefulness and perceived ease of use impact directly on behavioral intention to use, which is similar to initial anticipation (Koufaris 2002; Patel and Patel 2018). Also, Venkatesh et al. (2003) show that attitude toward using has no impact on the close relationship between perceived usefulness and behavioral intention to use. In the same vein, many other studies (e.g., Subramanian 1994; Keil et al. 1995; Chau 1996; Jackson et al. 1997; Igbaria et al. 1997; Venkatesh and Davis 2000; Legris et al. 2003; Patel and Patel 2018) have eliminated attitude toward using from their research model. Therefore, in our research, the TAM assumes that behavioral intention to use is directly affected by only perceived usefulness and perceived ease of use (Fig. 14.1).

2.2 Hypothesis Development for the Proposed Model

With theoretical and empirical confirmation, TAM has been acknowledged as the base model for technology products, including online banking services. TAM consistently explains a significant amount of variance in usage intention and behavior. The TAM seems to be not only a powerful model for showing the determinants of system utilization but also a valuable tool for system planning.

However, the TAM has limitations in giving a comprehensive explanation of which factors affect intention to use technology services (Salem et al. 2019; Patel and Patel 2018; Chen et al. 2007). To overcome this weakness, many studies such as Baabdullah et al. (2019), Chua et al. (2019), Cham et al. (2018), Patel and Patel

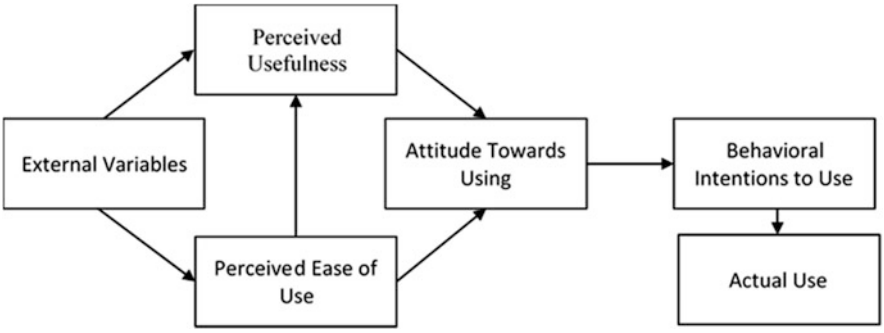

Fig. 14.1 Technology acceptance model (TAM) (Source: Davis et al. 1989)

(2018), Koksal (2016), Akturan and Tezcan (2012), and Chong et al. (2010a, b) have extended the TAM by incorporating or adding variables to improve the effectiveness and interpretation of the model. Based on that, in this study, we add more extensions to the original TAM to have a comprehensive assessment of factors affecting the intention of customers to use online banking services.

2.2.1 Perceived Usefulness (PU)

Perceived usefulness, making users believe that technology will improve work performance, is a crucial factor of the TAM (Davis et al. 1989). Perceived usefulness is the extent to which a person believes that using technology will increase his or her performance. In other words, it is the degree of belief of each individual that online banking service is more advantageous than traditional banking services (Chong et al. 2010a, b). It means that users will accept online banking services, which can reduce time and improve efficiency.

Based on 29 studies carried out from 1992 to 2003, Jeyaraj et al. (2006) pointed out that most of the research proved perceived usefulness having a significant impact on intention to use technology. Similarly, numerous empirical studies show a strong positive relation between these two factors in online banking services sector (Chang et al. 2018; Lim et al. 2018; Chuang et al. 2016; Lee 2016; Masinge 2010; Crabbe et al. 2009; Celik 2008; Gounaris and Koritos 2008; Pikkarainen et al. 2004). Perceived usefulness is an important indicator of technology acceptance. The more useful the technology seems to be, the more likely that the technology is used. Hence, the above discussion leads to our first hypothesis:

H1: Perceived usefulness has a positive relationship with the intention to use online banking services.

2.2.2 Perceived Ease of Use (PEOU)

According to Davis et al. (1989), perceived ease of use is the degree to which a person believes that using a system or technology will be free of effort. Perceived ease of use also refers to the level of the relaxation of customers in the process of learning how to use online banking services (Patel and Patel 2018). Hence, the more perceived ease of use of an application, the more likely to be accepted by users (Pikkarainen et al. 2004). Following the same line, Gounaris and Koritos (2008) note that the ease of use also boosts the customers' intention of using online banking services. Riquelme and Rios (2010) concluded that users tend to accept using online banking services in case they are convenient, user-friendly, and easy to operate.

In addition, many studies have shown a significant positive correlation between perceived ease of use and intention to use technology services, such as online banking (Patel and Patel 2018; Chong et al. 2010a, b; Szopiński 2016; Abbad 2013; Wang et al. 2003), mobile payments (Chang et al. 2018), fin-tech services (Hu et al. 2019; Chuang et al. 2016), mobile banking (Akturan and Tezcan 2012; Koksal 2016). Thus, the second hypothesis states as follows:

H2: Users' perceived ease of use has a positive impact on their intention related to using online banking services.

2.2.3 Brand Image

Brand image is a set of beliefs and impressions of customers about a particular brand (Kotler and Armstrong 1996). Brand image is also an intangible asset, which is an essential part for brands to distinguish their products from competitors (Aaker 1996; Kapferer 1992). Specifically, a brand image is the perception of the brand in the mind of customers (Harsandaldeep and Kanwalroop 2019).

It is worth noting that users must provide personal information to use online banking services. Thus, a good brand can enhance the trust of customers (Semuel and Lianto 2014; Lee and Chung 2009). Brand image acts firstly as a guarantee for online banking services, secondly as a contribution to the strong relationship between businesses and users, thirdly as an improvement of users' awareness and satisfaction (Saleem and Rashid 2011), and finally as a factor affecting the intention to use technology services (Siamagka et al. 2015). Several lines of evidence suggest that brand image has a positive impact on the intention to accept technology services (Hu et al. 2019; Do et al. 2017; Siamagka et al. 2015). Hence, the above discussion leads to our hypothesis:

H3: Brand image has a positive influence on intention related to using online banking services.

2.2.4 User Innovativeness (UI)

User innovativeness is defined as the level of acceptance of each individual in trying new technology, new products, or new service (Hu et al. 2019). It is conceptualized as the degree and speed of innovation adoption by an individual. In fact, a level of users' innovativeness reflects their interest in a new field. When an individual has a high level of innovativeness, he/she will be more motivated to changes in technology (Leicht et al. 2018).

Many recent studies have shown that in the field of technology, the level of innovation of users has a positive influence on the intention to use technology services (Zhang et al. 2018; Goldsmith 2002; Wood and Swait 2002; Hirunyawipada and Paswan 2006; Lu et al. 2005). Commenting on this relationship, Kim et al. (2010) argue that, in general, user innovativeness plays a critical role in the intention to use technology due to the lack of mobile payment services knowledge. This leads to the following hypothesis:

H4: User innovativeness has a positive influence on the intention to use online banking services.

2.2.5 Perceived Risk (PR)

Perceived risk is a construct that measures the uncertainty regarding possible negative consequences. More specifically, perceived risk is related to users' thoughts and beliefs about the possibility of receiving negative results in online transaction services (Kim et al. 2008). In other words, it means the lack of trust affects negatively the intention to use technology (Littler and Melanthiou 2006).

Normally, financial risks and privacy risk are the two common types of risk in online banking services (Patel and Patel 2018). The former are related to property damage caused by users or stakeholders, and the latter refers to the loss of personal data, transaction data, and other information (Hu et al. 2019). There are a large number of published studies (e.g., Hu et al. 2019; Khedmatgozar and Shahnazi 2017; Marakarkandy et al. 2017; Littler and Melanthiou 2006) believing that perceived risk affects negatively the intention to use technology services. Therefore, our hypothesis will be:

H5: Perceived risk has a negative impact on the intention to use online banking services.

2.2.6 Government Support (GS)

Government support can be seen through the investment in infrastructure including Internet bandwidth, legislation (Chong et al. 2010a, b), and the encouragement to develop e-commerce (Jaruwachirathanakul and Fink 2005). The study of Chong and Ooi (2008) shows that governmental investment in information infrastructure in

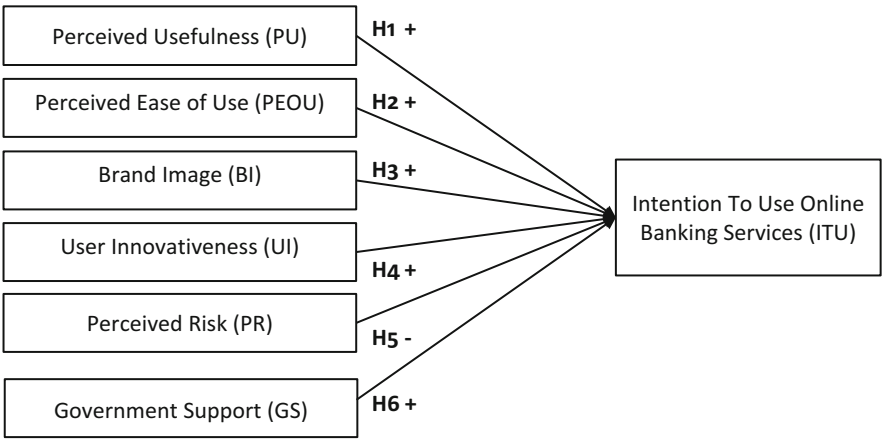

Fig. 14.2 Proposed research model

Singapore, Japan, and Malaysia is the main driver of developing online banking services. In Vietnam, cash is still the main payment method; therefore, the government strongly encourages citizens to use online banking services (Chong et al. 2010a, b). So, it is clear that government support has a significant positive effect on the intention to use online banking services (Tan and Teo 2000; Chong et al. 2010a, b). Therefore, the hypothesis is that:

H6: Government support has a positive impact on the intention to use online banking services.

The proposed research model in this study is based on TAM (Davis et al. 1989) and then edited to harmonize the economic environment in Vietnam. Figure 14.2 shows the research model and hypotheses. This study examines the impact of perceived usefulness, perceived ease of use, brand image, user innovativeness, perceived risk, and government support on intention to use online banking services in Vietnam, a frontier country.

3 Research Methodology

3.1 Data Collection

This study aims to analyze the main factors affecting the intention to use online banking services in Vietnam. According to Hair et al. (2010), the sample size for factor analysis should be at least 100 or 5-fold the number of observations. Thus, with the 23 initial variables, the minimum sample size should be 115.

Data is collected through an Internet survey. The only standard for joining this survey is that the participant is also a user of online banking service. After omitting the inappropriate response, the study obtained 359 (71.8%) responses.

Table 14.1 Descriptive statistics of the data ($N = 359$)

Demographic variable and category		Frequency	Percentage
Sex	Male	205	57.1
	Female	154	42.9
Age	<25	89	24.8
	26–35	142	39.6
	36–45	84	23.4
	46–55	35	9.7
	>56	9	2.5
Job	Office worker	145	40.4
	Worker	26	7.2
	Unemployed	15	4.2
	Manager	59	16.4
	Student	57	15.9
	Housework, retirer	12	3.3
	Others	45	12.5
Monthly income	<5 million VND	70	19.5
	5–<10 million VND	107	29.8
	10–<15 million VND	97	27.0
	15–<20 million VND	51	14.2
	20–<25 million VND	29	8.1
	>25 million VND	5	1.4
Academic level	High school	62	17.3
	College	104	29.0
	Bachelor	147	40.9
	Higher education	46	12.8
Forms of online banking services	Electronic transfer	318	88.6
	Electronic bill payment	240	66.9
	Transaction history	198	55.2
	Electronic savings	115	32.0
	Others	20	5.6
Length of using online banking services	Less than 6 months	30	8.4
	6 months–less than 1 year	98	27.3
	1 year–less than 2 years	124	34.5
	More than 2 years	107	29.8

Descriptive statistical results on demographic characteristics of 359 participants are shown in Table 14.1. The results indicate that 57.1% and 42.9% of respondents are male and female, respectively. The majority of participants (39.6%) are from 26 to 35 years old. This is reasonable because people in this range of age normally have a relatively high-level acceptance of new technology.

Besides, it can be seen that the office worker (40.4%) is the most popular job, followed by managers and students at 16.4% and 15.9%, respectively. Regarding the monthly income, 29.8% of respondents have a monthly income from 5 million to

under 10 million VND, and only 1.4% of them have an income of over 25 million VND per month. About the academic level, most of the online banking users obtain bachelor's degrees (40.9%), followed by college (29%), high school (17.3%), and higher education (12.8%). Regarding forms of online banking services, electronic transfer and electronic bill payment are most frequently used at 88.6% and 66.9%, respectively. Moreover, 34.5% of respondents have used online banking services from 1 year to less than 2 years which means that they have a quite long time to experience these services.

3.2 Instrument Development

The design of the survey is based on relevant research models and measurement scales and then revised by the group of authors. Table 14.2 shows the measurement scale of this study.

Factor PU is based upon the study of Akturan and Tezcan (2012) and Sharma and Srikrishna (2014). Similarly, factor PEOU is revised from Akturan and Tezcan (2012) and Zhang et al. (2018). Based mainly on Hu et al. (2019), we construct BI factor. PR and ITU are synthesized from Marakarkandy et al. (2017) and Akturan and Tezcan (2012), Sharma and Srikrishna (2014), and Marakarkandy et al. (2017).

The collected quantitative data will be processed by SPSS 22.0 to check the reliability of the scale via Cronbach's alpha coefficient and then conduct exploratory factor analysis (EFA) and multiple linear regression.

4 Results

4.1 Reliability Analysis

Cronbach's alpha coefficients, which show the consistency of the scale, are often used to determine the reliability of collected data. In their research, Nunnally (1967) and Hair et al. (2010) suggested that Cronbach's alpha coefficient should be greater than 0.7.

From Table 14.3, it can be easily seen that most of Cronbach's alpha coefficients are larger than 0.7. In particular, Cronbach's alpha coefficients of BI, PR, GS, and PU are 0.859, 0.853, 0.822, and 0.818, respectively. Therefore, the scale and collected data in this study ensure the reliability of the following analysis.

Table 14.2 Measurement instruments

Items	The observed variables Perceived usefulness (PU)	Sources
PU1	I think that using online banking would enable me to accomplish my tasks more quickly	Akturan and Tezcan (2012), Sharma and Srikrishna (2014)
PU2	I think that using online banking would make it easier for me to carry out my tasks	
PU3	I think online banking is useful	
PU4	Online banking helps me to manage banking activities better	
PU5	Overall, I think that using online banking is advantageous	
Perceived ease of use (PEOU)		
PEOU1	I think that learning to use online banking would be easy	Akturan and Tezcan (2012), Zhang et al. (2018)
PEOU2	I think that learning to use online banking does not require a lot of mental effort	
PEOU3	It is easy for me to become skillful at using my devices to facilitate banking services	
Brand image (BI)		
BI1	I think I prefer to accept the services provided by familiar brands	Hu et al. (2019)
BI2	The bank has a good reputation	
BI3	I trust the bank brand that I am using or planning to use	
User innovativeness (UI)		
UI1	If I heard about new information technology, I would look for ways to experiment with it	Zhang et al. (2018), Lu et al. (2005)
UI2	Among my peers, I am usually the first to explore new information technologies	
UI3	I like to experiment with new information technologies	
Perceived risk (PR)		
PR1	I believe that money can easily be stolen while using online banking	Marakarkandy et al. (2017), Akturan and Tezcan (2012)
PR2	I think that there would be problems with my financial transactions while using online banking	
PR3	Overall, I feel online banking is risky	
Government support (GS)		
GS1	Government of Vietnam supports and promotes usage of the Internet and e-commerce	Tan and Teo (2000), Marakarkandy et al. (2017)
GS2	Government of Vietnam is active in setting up facilities such as providing adequate telecommunication facilities, which will be an enabler of online banking	
GS3	Government of Vietnam has framed good regulations and laws for information technology use	

(continued)

Table 14.2 (continued)

Items	The observed variables Perceived usefulness (PU)	Sources
Intention to use (ITU)		
ITU1	I will be using online banking in the future regularly	Sharma and Srikrishna (2014), Marakarkandy et al. (2017)
ITU2	I will recommend peers to use online banking	
ITU3	I have the intention to use online banking in the future	

Table 14.3 Results of reliability analysis

Variables	Items	Cronbach's alpha
Perceived usefulness (PU)	5	0.818
Perceived ease of use (PEOU)	3	0.765
Brand image (BI)	3	0.859
User innovativeness (UI)	3	0.775
Perceived risk (PR)	3	0.853
Government support (GS)	3	0.822
Intention to use (ITU)	3	0.740

Table 14.4 KMO and Bartlett's tests

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy		0.774
Bartlett's test of sphericity	Approximate chi-square	3284.007
	Degree of freedom	190
	Probability	0.000

4.2 Exploratory Factor Analysis (EFA)

To evaluate the validity of the scale, the exploratory factor analysis (EFA) and the principal component analysis method with Varimax rotation, which is the most commonly used method with the unidirectional concept (Chong et al. 2010a, b), are applied in this study.

As can be seen from Table 14.4, the KMO test value is 0.774, meaning that the items within each factor are adequate for grouping. The results of Bartlett's test indicate the probability or significance value is 0.000, which means the variables are adequately correlated and accommodate an acceptable basis for factor analysis.

Turning to component analysis, the result of the cumulative variance of six factors in Table 14.5 is 71.654 (at eigenvalues 1.412), which is a good variance percentage. The rotating factor matrix result of all variables, including PU, PR, BI, PEOU, GS, and UI, is higher than 0.5 satisfying the factor loading. In conclusion, the variables in each factor group are strongly correlated with each other and consistent with the proposed model.

Table 14.5 Results of principal components analysis

Items	PU	PR	BI	PEOU	GS	UI
PU3	0.884					
PU2	0.814					
PU4	0.755					
PU5	0.646					
PU1	0.628					
PR3		0.910				
PR1		0.834				
PR2		0.822				
BI2			0.889			
BI1			0.823			
BI3			0.821			
GS2				0.841		
GS1				0.826		
GS3				0.796		
UI2					0.826	
UI1					0.805	
UI3					0.781	
PEOU3						0.825
PEOU1						0.814
PEOU2						0.797
Variance explained by each factor in percentage	15.198	11.939	11.856	11.471	10.782	10.409
Cumulative variance explained in percentage	15.198	27.137	38.993	50.464	61.246	71.654
Eigenvalues	1.412					

4.3 Multiple Regression Analysis

Multiple regression analysis, a statistical technique, aims to test the relationship between independent variables, namely, PU, PEOU, BI, UI, PR, and GS, and the intention to use online banking service, a dependent variable.

The regression result in Table 14.6 presents adjusted R2 value of 0.370, meaning that independent factors explained 37.0% of the variation of the dependent variable intention to use online banking services. Analysis of ANOVA variance showed that $F = 36.003$ and is statistically significant (sig. = 0.000), proving the regression model is consistent with the data and variables in the analysis model.

From the table above, we can see that factors, namely, PU, PEOU, BI, UI, and GS, have significant positive impacts on ITU, while PR has a significant negative impact. This leads to the acceptance of 1, 2, 3, 4, 5, and 6 hypotheses.

Table 14.6 Results of multiple regression analysis

Variables	Unstandardized coefficients		Standardized coefficients			Collinearity statistics	
	B	Std. error	Beta	*T*	Sig.	Tolerance	Variance inflation factor
(Constant)	1.653	0.275		6.014	0.000		
PU	0.149	0.042	0.165	3.579	0.000	0.826	1.211
PEOU	0.138	0.039	0.155	3.510	0.001	0.907	1.102
BI	0.111	0.037	0.143	3.010	0.003	0.783	1.278
UI	0.224	0.040	0.256	5.569	0.000	0.831	1.204
PR	-0.123	0.034	-0.162	-3.585	0.000	0.866	1.155
GS	0.103	0.035	0.140	2.974	0.003	0.792	1.263
Adjusted $R^2 = 0.370$							
F-statistics (sig.) = 36.003 (0.000)							

5 Discussion

From the statistical results in Table 14.6, we can see that the intention to use online banking service in Vietnam depends mainly on these factors: PU, PEOU, BI, UI, PR, and GS.

With the standardized correlation coefficient of 0.256 (sig. = 0.000 < 0.05), UI has the strongest impact on the intention of customer to use online banking service in Vietnam. PU ($\beta = 0.165$, sig. = 0,000 < 0.05) stands in the second place. Though PR affects intention to use online banking service, it is the third important factor. The remaining factors, including PEOU, BI, and GS, have a minor impact on the dependent variable. These results will be clarified as follows:

PU and PEOU are important factors affecting the intention to use online banking services in Vietnam. PU is the factor leading to the utilization of the online banking service of the customer. This result is broadly supported from previous studies including Chang et al. (2018) in China, Lim et al. (2018) in Korea, Chuang et al. (2016) in Taiwan, and Nguyen et al. (2014) and Le and Truong (2008) in Vietnam. As soon as customers realize the usefulness of using an online banking service, they will use it. Therefore, how to enhance the perceived usefulness of online banking services to customers is still a big question for the Vietnam banking sector. Each bank should survey core customer groups to understand deeply their needs and then promote the more appropriate online banking service.

As mentioned in the literature review, PEOU, the second factor in the TAM, positively affects the intention to use online banking service. This finding is consistent with that of Patel and Patel (2018), Chong et al. (2010a, b), Szopiński (2016), and Abbad (2013). A possible explanation for this might be that the majority of participants in our survey are under 35 years old which is quite young. Customers in the young age range believe that they can learn to use online banking service easily

(Chong et al. 2010a, b). In other words, new technology is not an obstacle for customers when deciding to use online banking services.

Another important finding was that GS has a positive influence on Vietnamese customers when using online banking services. This result is consistent with Tan and Teo (2000) and Chong et al. (2010a, b). In Vietnam, there has been a rapid development of telecommunication networks and Internet system. Also, smartphones connecting to Wi-Fi, 3G, and 4G are available recently. Based on the data provided by the Vietnam Ministry of Information and Communication, up to July 2019, there are nearly 72 million Internet users in Vietnam which accounts for 60% of the total population, and the average using time is 7 h/day. Besides that, from 2015 until now, the Vietnam Government and related agencies have been issuing legal documents for online banking activities. In particular, Vietnam State Bank stipulates Circular No. 35/2018/TT-NHNN and Circular No. 35/2016/TT-NHNN to provide safe and confidential online banking services, which can build the trust for customers and impact positively the intention of using online banking services.

On the question of how BI affects intention to use online banking services in Vietnam, this study found a significant positive relationship between these two factors. The result reflects those of Do et al. (2017) and Siamagka et al. (2015) who also confirm this positive relationship. In the context of the globalization of the banking sector, this finding is remarkable. In Vietnam, it is easy to realize that many foreign banks have been established, for instance, HSBC, ANZ Vietnam, Standard Chartered, Shinhan Vietnam, Citibank Vietnam, etc. So, small banks will compete desperately not only with foreign banks but also with big domestic banks including BIDV, Vietcombank, Agribank, and Vietinbank. Therefore, each bank has to build its brand image for sustainable development.

It is interesting to note that in all six factors, PR is the only factor that affects the intention to use online banking services in Vietnam. This also accords with earlier studies, namely, Marakarkandy et al. (2017) and Littler and Melanthiou (2006). The result indicates that both financial risk and private risk are obstacles in utilizing online services in the banking industry. Hence, it is necessary to make sure that all information and transitions through online banking services are carefully protected.

Another finding in this study is that UI has the most significant impact on customers' intention to use online banking services. Compared to previous studies, this is quite a new finding. Over the past decade, there has been significant progress in Vietnam renovation activities. In 2018, Vietnam ranked 45 over 126 countries in the Global Innovation Index (Cornell University, INSEAD, WIPO 2018). Innovation activities have taken place strongly, spreading to the government, businesses, and citizens. According to APPOTA (2018), Vietnamese users get ready for using new applications and technologies. This finding suggests that a young population, high-speed Internet connection, and the increase in smartphone utilization provide advantages for deploying online banking services in Vietnam.

6 Conclusions

This study is set out to examine the effect of the original factors of the TAM, including PU and PEOU, and other extended factors, namely, BI, UI, PR, and GS, on the intention to use online banking services in Vietnam. With 359 valid questionnaires, the data is processed through EFA and multiple regression.

The results of this research show that both PEOU and PU have a positive impact on the intention to use online banking services. Multiple regression analyses also revealed the similar impact of UI, GS, and BU. However, PR has a significant negative impact on the dependent variable. It is also worth mentioning that the intention to use online banking services in Vietnam is affected dramatically by UI factor.

These findings will be of interest to policymakers in emerging countries like Vietnam. The empirical findings in this study provide an understanding of government support in promoting the use of online banking services through a clear legal corridor and comprehensive Internet infrastructure. Likewise, policies promote the spirit of innovation is really important. Because users' innovativeness is the strongest factor affecting the intention to use online banking services, which provides a deeper understanding of customers for bank managers in Vietnam and gives them a basic guide for planning a successful online banking services strategies.

7 Limitations and Future Directions

A limitation of this study is that the multiple regression model can explain 37% of the intention to use online banking services. This would be a fruitful area for further work to consider other factors so that it is possible to examine the intention of customers for using online banking services more comprehensively. Also, the small sample size makes these findings less generalizable. Therefore, follow-up studies may consider larger sample sizes to increase overall reliability and representativeness.

Last but not the least, this study only considers the relationship between independent variables and the intention to use online banking services in Vietnam. Causal relationships among independent variables should be examined through the SEM in future researches.

8 Compliance with Ethical Standards

An ethics approval was not required as per institutional guidelines and national laws and regulations because no unethical existed in this study. The authors declare that they have no conflict of interest. All procedures performed in studies involving

human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

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Chapter 15
Research on Interpolation Methods and Fitting Models for the Lorenz Curve

Li Zhang, Kien Nguyen The, Q. Youjian, Lizhen Wei, Khac Lich Hoang, and Manh Hung Le

Abstract The Lorenz curve is very important to show the income distribution for a country. Based on the work of other scholars, this chapter at first discusses some existing interpolation methods and points out their shortcomings. To overcome the existence of higher-order derivatives for Lagrange interpolation, this paper sets up one method and makes some analyses about the methods. Then, a new family of Lorenz curves is suggested and the corresponding properties discussed. With collected income data from some regions in China, statistical indices show better results compared with other existing curves.

Keywords Interpolation method · Lorenz curve

1 Introduction

From the last century since the reform and opening, with the continuous development of the economy, the overall strength of our country and its economic conditions have improved greatly. However, in some provinces rural poverty still exists in remote areas. The party and the government have placed great importance on the

L. Zhang
School of Mathematics and Statistics, Changshu Institute of Technology, Suzhou, China

Business School, Nanjing Normal University, Nanjing, China

K. N. The (✉) · K. L. Hoang
VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam

Q. Youjian
Yangzhou High School of Jiangsu Province, Yangzhou, Jiangsu, China

L. Wei
Jiangsu Province Changshu Vocational Educational Center School, Suzhou, China

M. H. Le
Ministry of Education and Training, Hanoi, Vietnam

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problem of the poor in our country with a special economic development policy and fiscal subsidy (Bai 2007; Cao 2007; Guo 2007). These efforts by the government have achieved apparent results. In the spring of 2014, Prime Minister Li Keqiang, on behalf of the central people government for the work report, pointed out last year that the rural poverty population was reduced 16.5 million and the gap between urban and rural resident income continues to shrink. At the same time, the United Nations says "Yes" for China in recent stage poverty alleviation work results. According to the wealth of the credit suisse report in October 2014, the phenomenon of the unequal distribution of wealth is more intensified; the Gini coefficient is rising around the world. The Chinese Gini coefficient has gradually risen to cordon and to secure the red line approximation (Mei and Fan 2005; Wang and Fan 2005; Hu 2004; Liu 2006). This step must attach great importance to the problem, involving stability and prosperity.

In economics, the Lorenz curve is a graphical representation of the cumulative distribution function of the empirical probability distribution of wealth, developed by Max O. Lorenz in 1905 for representing the inequality of wealth distribution. The Lorenz curve is used to compare and analyze a country in a different age or wealth inequality of different countries at the same time. The curve as a convenient summary of income and wealth distribution information is widely used in the graphic method. Through the Lorenz curve, we can visualize national income distribution equality or inequality. A rectangle drawn as a measure of the percentage of social wealth will be divided into five equal parts; each class is divided into 20 categories of social total wealth. In the rectangular mode, 100 families from the poor to the very richest are arranged from left to right, divided into five parts; the first equal parts on behalf of 20 of the lowest income families.

This chapter is organized as follows. In Sect. 2, we discuss some interpolation methods and analyze their characteristics. Then, one kind of function is advocated to obtain any higher-order derivatives for Lagrange interpolation. In Sect. 3, we describe the basic properties of the Lorenz curve and Gini coefficient. Some recent literature on these is discussed. And we put forward the new construction for Lorenz curves, and new expressions of the new family of Lorenz curves are provided.

2 Interpolation Methods About the Lorenz Curve

A large number of engineering problems involve the unknown function approximation. Usually a set of observations, then using the appropriate interpolation method, can calculate the function approximation. When making the error analysis, however, the function must have good properties with a 1 to $n + 1$ order derivative. In practical engineering problems, however, the function can ensure continuity, but it is very difficult to obtain a higher derivative and guarantee its existence.

2.1 Analysis of Some Interpolation Methods About the Lorenz Curve

Since the Lorenz curve was put forward in 1905 and the collected data are discrete, some scholars have paid attention to the interpolation method for it. Gastwarth gives the Hermite interpolation method for a Lorenz curve. Other scholars have suggested the forward linear interpolation method and Newton interpolation method. In this section, we give the concrete formulas, then discuss the advantages and shortcomings of these methods. It is known that the interpolation method is used to construct the Lorenz curve using the collected data (x_i, y_i), $i = 0, 1, 2, \cdots, n$ about the income distribution. The simplest interpolation method is linear interpolation, which uses a line to connect two adjacent points(x_k, y_k) and (x_{k+1}, y_{k+1}) with the formula as follows:

$$L_1(x) = l_0(x)y_k + l_1(x)y_{k+1},$$

where

$$l_0(x) = \frac{x - x_{k+1}}{x_k - x_{k+1}}, \quad l_1(x) = \frac{x - x_k}{x_{k+1} - x_k}$$

The basic thought of Hermite interpolation is the piecewise interpolation nodes, but we need to connect the piecewise function curve smoothly, forming a smooth curve. The most commonly used is cubic spline interpolation. For the nodes(x_i, y_i), $i = 0, 1, 2, \cdots, n$ the concrete expression in the interval$[x_i, x_{i+1}]$ of Hermite interpolation is as follows:

$$S_j(x) = A_j + B_j x + C_j x^2 + D_j x^3, \quad j = 0, 1, \cdots, n-1$$

Then, through some conditions it is possible to determine the coefficients. Newton interpolation $N(x)$ is as follows:

where

$$N(x) = L(x) - R_n(x)$$

$$L(x) = L[x_0] + L[x_0, x_1](x - x_0) + \cdots + L[x_0, x_1, \cdots, x_n]\Pi_{i=0}^{n}(x - x_i) + R_n(x)$$

$$L[x_0, x_1, \cdots, x_k] = \frac{(L[x_0, x_1, \cdots, x_k] - L[x_0, x_1, \cdots, x_{k-1}])}{x_k - x_0}$$

so the error estimation is $R_n(x)$..

The piecewise linear interpolation method is very simple, but it cannot be guaranteed to be differentiable at the nodes, farther from the second-order differentiable. For the Lorenz curve, the piecewise linear interpolation method is on the curve, so it is certain to make the Gini coefficient smaller. Thus, the method is not

limited. The Hermite interpolation method is used in some fields but it has some shortcomings. The first one is that the computations are complicated when the numbers of nodes is large. The second one is the error estimation. Because the defined curve is not expressed clearly with discrete data and the higher order of derivatives (more than 3) is unattainable, the error estimation in the Hermite interpolation method is not too accurate.

2.2 Analysis of New Method for Lagrange Interpolation

The function $\theta(x)$ is defined as follows:

$$\theta(x) = \begin{cases} \sigma e^{\frac{-1}{a^2-x^2}}, & x < a \\ 0, & x \geq a \end{cases}, \tag{34.1}$$

whereσ is a constant and $\frac{1}{\sigma} = \int_{-a}^{a} e^{\frac{1}{a^2-x^2}} dx$. The constant a is positive. It is obvious that the function $\theta(x)$ is continuous and differentiable if $|x| \neq a$.

Now we consider that expression that

$$\lim_{x \to a^+} \theta(x) = \lim_{x \to a^+} 0 = 0, \tag{15.2}$$

At the same time, it is also true that

$$\lim_{x \to a^-} \theta(x) = \lim_{x \to a^-} \int_{-a}^{a} e^{-\frac{1}{a^2-x^2}} = 0. \tag{15.3}$$

So the function is continuous at the point $x = a$. Similarly, the function is continuous at the point $x = -a$. So the function $\theta(x)$ is continuous in R, and it is differentiable in the open interval where a is a positive constant. On the other hand, the integration of the function on R is 1; it is expressed as follows:

$$\int_R \theta(x)dx = \int_{|x| \geq a} \theta(x)dx + \int_{-a}^{a} \theta(x)dx = 0 + 1 = 1. \tag{15.4}$$

Theorem 2.1 The function $\theta(x)$ is the one as in before and the function$\theta_m(x)$ is defined as follows:

$$\theta_m(x) = m\theta(mx), m = 1, 2, \ldots, \tag{15.5}$$

So the following conclusions are true.

$$\int_R \theta_m(x)dx = 1. \tag{15.6}$$

The compact support set of the function $\theta_m(x)$ is

$$\left[-\frac{a}{m}, \frac{a}{m}\right]. \tag{15.7}$$

Proof The proof of theorem 2.1 is as follows:.

$$\int_R \theta_m(x)dx = \int_R m\theta(mx)dx = \int_R \theta(u)du = 1. \tag{15.8}$$

when $|x| \geq \frac{a}{m}, mx \geq a,$. Thus, $\theta_m(x) = m\theta(mx) = 0$.

Theorem 2.2 The function $f(x)$ is continuous in R and the function $\theta_m(x)$ is as before. The function $f_m(x)$ is defined as follows:

$$f_m(x) = \int_R f(y)\theta_m(x-y)dy, m = 1, 2, \ldots \tag{15.9}$$

So the following conclusions are true for any$x \in R$.

$$\lim_{m\to\infty} f_m(x) = f(x). \tag{15.10}$$

$$f_m(x) \in C^\infty(R), m = 1, 2, \cdots. \tag{15.11}$$

Proof Let us proof the first conclusion in this theorem.

Set $y = v + x$, so it is clear that

$$\begin{aligned} f_m(x) &= \int_R f(y)\theta_m(x-y)dy = \int_R f(v+x)\theta_m(-v)dv \\ &= \int_R f(v+x)\theta_m(v)dv. \end{aligned} \tag{15.12}$$

Thus, we consider the absolute value of two functions $f(x)$, $f_m(x)$, which is as follows:

$$
\begin{aligned}
&|f(x) - f_m(x)| \\
&= \left| \int_R f(x+v)\theta_m(v)dv - \int_R f(x)\theta_m(v)dv \right| \\
&= \left| \int_R (\ f(x+v) - f(x))\theta_m(v)dv \right| \\
&\le \left| \int_{v \le \frac{a}{m}} f(x+v) - f(x) \right| \theta_m(v)dv \\
&\le \int_{v \le \frac{a}{m}} |f(x+v) - f(x)|\theta_m(v)dv \\
&\le \sup_{v \le \frac{a}{m}} |f(x+v) - f(x)| \int_{v \le \frac{a}{m}} \theta_m(v)dv \\
&\le \sup_{v \le \frac{a}{m}} |f(x+v) - f(x)|.
\end{aligned}
\tag{15.13}
$$

Because the function is continuous in R, the following is true:

$$
\lim_{m \to \infty} \sup_{v \le \frac{a}{m}} |f(v+x) - f(x)| = 0. \tag{15.14}
$$

Now we give the proof about the second conclusion. It is known that $f(y)$ is continuous on R and the function $f_m(x) \in C^\infty(R)$ on the interval $\left(x - \frac{a}{m}, x + \frac{a}{m}\right)$. So we see the following expression:

$$
f_m(x) = \int_R f(y)\theta_m(x-y)dy = \int_{-\frac{a}{m}}^{\frac{a}{m}} f(y)\theta_m(x-y), m = 1, 2, \ldots \tag{15.15}
$$

If we make the$p$ derivative about the function $f_m(x)$, then we have the following expression:

$$
{f^{(p)}}_m(x) = \int_R f(y) \frac{\partial}{\partial x} \theta_m(x-y)dy \quad (p = 1, 2, \ldots) \tag{15.16}
$$

The functions $f_m(x)$, $f(x)$ are defined in the former part. Now we consider the interpolation polynomial for $f_m(x)$. But for that function $f_m(x)$, we do not have any observation points. There is one group of observation points: (x_i, y_i), $i = 0, 1, 2, \cdots, n$. By the related theory, for any $\varepsilon > 0$, there exists $N > 0$, when $m > N$, for any $k > 0$, it is clear that

$$
|\ f_m(x) - f(x)| \le \varepsilon. \tag{15.17}
$$

Set $y_k(m) = f_m(x_k)$, $y_k = f(x_k)$, If $y_k(m) = f_m(x_k)$ is substituted by $y_k = f(x_k)$, and this kind of error estimation is under control for the foregoing conclusion. Set the function $R_{n,\ m}$ as follows:

$$R_{n,m} = f_m(x) - P_n(x) = \frac{f^{(n+1)}(\varsigma)}{(n+1)!}\Pi_{k=0}^{k=n}(x - x_k) \tag{15.18}$$

For any $x \in R$, it is obtained when $m \to \infty$ that

$$\begin{aligned} |R_n(x) - R_{n,m}(x)| &= |(\ f(x) - P_n(x)) - (\ f_m(x) - P_n(x))| \\ &= |\ f(x) - f_m(x)| \to 0. \end{aligned} \tag{15.19}$$

3 Research on Fitting Models for the Lorenz Curve

Income distribution is related to the broad masses of people's standard of living; the degree of distribution justice is the key point for ordinary people. To measure the distribution of the residents' income level, we often adopt the Lorenz curve. Here, the function $L(p)$ is equal to p low-income population share and has a share of the total that is defined in the function on the interval. $p = F(x)$ said the proportion of people earning less than or equal to x, where $F(x)$ is the distribution function of income distribution. The function $f(x)$ is the density function of income distribution.

3.1 Basic Theory and Related Research

In empirical analysis of income distribution, the income distribution curve generally is what is called the forward bias, the peak point to the left and the right end, dragging a long tail. Point x_0 is called the modal point; m is the median number, and μ is the average income. It is clear that $x_0 < m < \mu$ under this circumstance. In conditions as noted earlier, $L(p)$ can be expressed as

$$L(p) = \frac{1}{\mu}\int_0^x tf(t)dt = F(x). \tag{15.20}$$

There is a relationship between the function $L(p)$ and the function$f(x)$:

$$L'(p) = \frac{\mu}{x}, f(x) = \frac{1}{\mu L''(p)}. \tag{15.21}$$

Because $p = F(x)$, known as the inverse function for $x = F^{-1}(p)$, and $L(p)$ can be expressed as the Lorenz curve

$$L(p) = \frac{1}{\mu}\int_0^q qF^{-1}(q)dq. \tag{15.22}$$

And because the China statistical yearbook published on so-called packet data in the form of

$$\left(p_i, \frac{p_i}{\frac{x_i}{\mu}}\right), i = 1, 2, \cdots, n \tag{15.23}$$

$$(p_i, L_i), i = 1, 2, \cdots, n \tag{15.24}$$

It is well known that $L'(p) = \frac{\mu}{x}$, so (15.23) expresses the points in the curve of $L^{'}(p)$ whereas (15.24) expresses the points in the curve of $L(p)$.

3.2 Construction of the New Lorenz Curve

It is vital to set up the necessary conditions for a Lorenz curve, which is the definition of the Lorenz curve. The curve that is satisfied with the following conditions is called a Lorenz curve.

$$L(0) = 0, L(1) = 1; \tag{15.25}$$

$$L(p) \geq 0, p \in [0, 1]. \tag{15.26}$$

1. $L(p)$ is the increasing function about p, which satisfy the $L\,L'(p) \geq 0$ represents that the greater the population share of low-income has the corresponding group has the greater the share of the total income
2. $L(p)$ is a convex function about p, which satisfies $L^{''}(p) \geq 0$ said is when p increases, the $L(p)$ to a larger proportion increases.

A number of parametric models that satisfy the basic properties of an LC have been proposed in the literature. In those papers, the scholars advocate the different models for LC. Some of the concrete results are listed in Table 15.1.

From the character of an arch function, we set the function expression as follows:

$$I_0 = -Ap^{\alpha}(1-p)^{\beta}, \tag{15.27}$$

This kind of function can show the different arches with the different values of parameter α and β. When $\alpha < \beta$, the arch of the function tends to the right. When

Table 15.1 Some models for a Lorenz curve

Time	Authors	Model
1973	Kakwani	$L(p) = p^{\alpha}e^{-\beta(1-p)}$
1980	Rasche	$L(p) = (1-(1-p)^{\alpha})^{\beta p}$
1991	Ortega et al.	$L(p) = p^{\alpha}(1-(1-p)^{\beta})^{\gamma p}$
1991	Ortega et al.	$L(p) = p^{\alpha}[(1-(1-p)^{\beta})^{\gamma}]^{\delta}$
1999	Sarabia et al.	$L(p) = p^{\alpha}(1-(1-p)^{\beta})^{\gamma p}$
2000	Ogwang	$L(p) = \frac{e^{\lambda p}-1}{e^{\lambda}-1}$
2009	Wang et al.	$L(p) = p^{\alpha}(1-(1-p)^{\beta}e^{-\gamma p})$

$\alpha > \beta$, the arch of the function tends to the left. Combined with the 45° line and the curve I_0, we can get the new function for Lorenz curves, which is shown in the following:

$$I = p - Ap^{\alpha}(1-p)^{\beta}, \tag{15.28}$$

where the parameters meet the following conditions:

$$A > 0, 0 \leq \alpha \leq 1, 0 < \beta \leq 1. \tag{15.29}$$

From the definition of the Lorenz curve, we can find that the function I is satisfied with the following conditions:

$$L(0) = 0, L(1) = 1, L'(p) \geq 0, L''(p) \geq 0. \tag{15.30}$$

So it is clear that the function I is the new expression for a Lorenz curve. Compared with others' work, this expression is outside the usual GP model with more generality to be suitable for the real world. Studying the model given by, we put forward the new family for the Lorenz curve, which is shown in the following expression

$$L_{\lambda}(p) = p^{\lambda}\left[p - Ap^{\alpha}(1-p)^{\beta}\right], \tag{15.31}$$

As most models for the Lorenz curve are dependent on the classical Pareto curve, which form is $1-(1-p)^{\beta}$, in this expression of Pareto curve we can see that there is no p. Based on the related theory, $L(p)$ is a Lorenz curve. Combined the demand for parameters in the function L(p) , the conditions for parameters in the function $L_{\lambda}(p)$ are as follows:

$$A > 0, 0 \leq \alpha \leq 1, 0 < \beta \leq 1, 0 \leq \gamma \leq 1. \tag{15.32}$$

3.3 Parameter Fitting and Model Comparison

With the collected data, which reflect the income of some provinces in China, which is in Table 15.2.

For overfitting the data, it is usual to use the nonlinear least squares method to compute the value of the parameters in the model in the field of economy. That is to say, considering the following problem:

$$\min S(\tau) = \sum_{i=1}^{n} \left(L_i(p,\tau) - L_i\right)^2 \tag{15.33}$$

The vector values of parameters τ can be found with some methods, such as the LM method; then the vector value $\_\tau$ for the vector τ is called the estimated vector value.

Then, the function

$$L(p,\tau) = p_{\lambda}^{\alpha}\left(p - Ap^{\alpha}(1-p)^{\beta}\right), \tag{15.34}$$

is called the approximate function for the real Lorenz curve.

To compute the value for the parameters with the data, this paper adopts the classical Levenberg–Marquard algorithm. The concrete result is the following:

Table 15.2 Data

x_j	x_{j+1}	f_j	p_j	L_j
0.00	999.00	0.0780	0.0780	0.0590
1000.00	1499.00	0.0560	0.1340	0.0165
1500.00	1999.00	0.0420	0.1760	0.0276
2000.00	2499.00	0.0470	0.2230	0.0436
2500.00	2999.00	0.0420	0.2650	0.0611
3000.00	3499.00	0.0440	0.3090	0.0828
3500.00	3999.00	0.0410	0.3500	0.1061
4000.00	4999.00	0.0860	0.4360	0.1647
5000.00	5999.00	0.0920	0.5280	0.2413
6000.00	6999.00	0.0880	0.6160	0.3279
7000.00	7999.00	0.0800	0.6960	0.4188
8000.00	8999.00	0.0650	0.0650	0.5024
9000.00	9999.00	0.0520	0.8130	0.5772
10,000.00	11,999.00	0.0780	0.8910	0.7071
12,000.00	14,999.00	0.0560	0.9470	0.8216
15,000.00	24,999.00	0.0430	0.9900	0.9453
25,000.00		0.0100	1.0000	1.0000

Table 15.3 Some models for a Lorenz curve

No	Authors	MSE	MAE	MAS
1	Podder	2.71×10^{-4}	0.0126	0.0435
2	Kakwani	4.02×10^{-6}	0.0160	0.0038
3	Rasche	1.82×10^{-5}	0.0035	0.0080
4	Gupta	1.05×10^{-4}	0.0091	0.0176
5	Ortega	9.38×10^{-6}	0.0029	0.0052
6	Sarabia	1.42×10^{-5}	0.0034	0.0068
7	Ogwang	2.72×10^{-4}	0.0144	0.0356
8	Wang	0.85×10^{-4}	0.0220	0.0548
9	Zhang	3.10×10^{-6}	0.0126	0.0051

$$\_\tau = (\_\alpha, \_\beta, \_\gamma, \_A) = (0.3448, 0.5837, 0, 8156, 0, 0, 5628) \tag{15.35}$$

Then we see some statistical indexes such as MSE, MAE, and MAS, which are normally used in economy and finance.

MSE is called mean squared error:

$$MSE = \frac{1}{n}\sum_{i=1}^{n}(L_i(p, -\tau) - L_i)^2; \tag{15.36}$$

MAE is called mean absolute error:

$$MAE = \frac{1}{n}\sum_{i=1}^{n}|L_i(p, -\tau) - L_i|; \tag{15.37}$$

MAS is called maximum absolute error:

$$MAS = \max_{1\le i\le n}\sum_{i=1}^{n}|L_i(p, -\tau) - L_i|. \tag{15.38}$$

The statistical indexes follow:

$$\text{MSE} = 0.000021317; \text{MAE} = 0.0013; \text{MAS} = 0.0025. \tag{15.39}$$

We make some computations with the data. Details about the three different indices are given in Table 15.3.

4 Conclusions and Discussion

In this paper, we provide the background of the Lorenz curve and the Gini coefficient. The basic relationship between the Lorenz curve and Gini coefficient is described. Then, some transformation formulas for the density function and the distribution function are presented. Based on the graphicical character of arch function, we propose a new method to construct a family of Lorenz curves and show some properties of it. With the collected income data in China, some computations about parameter estimation and error analysis are completed. The results show that our models are superior.

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Chapter 16
Analyzing the Differences in the Impact of FDI and Exports on Labor Productivity of Enterprises: The Case of Vietnam

Linh Vu Phuong Dao

Abstract This paper highlights the difference in the impact of two possible international technology channels, FDI and export, to labor productivity of Vietnamese enterprises that have different sizes and levels of capital intensity. The study uses panel data about small and medium enterprises (SMEs) and large enterprises in Vietnam which are summarized from the Vietnam Enterprise Survey (VES) period 2015–2016. The paper found that FDI has a positive impact on the firm's labor productivity, but exports do not change firm labor productivity, for labor-intensive industries. For capital-intensive industries, FDI does not change the labor productivity of those enterprises, but the export of products to foreign markets has a positive meaning for the labor productivity of enterprises in the industry. Firm size does not have an impact on labor productivity in general but for FDI enterprises of the labor-intensive sector, the larger enterprises size the better labor productivity while the export enterprises capital intensive should narrow the scale to better labor productivity.

Keywords FDI · Exports · Size · Labor productivity

1 Introduction

In the 1990s of the twentieth century, Vietnam's economy experienced remarkable growth, mainly from increasing labor productivity in agriculture. Over the next 10 years, Vietnam's economic growth was based on the rise of the private enterprise system, which created millions of jobs thanks to the shift in export-driven economic structure through trade liberalization. Based on competitive advantages in production, especially labor-intensive industries, Vietnam attracts large and stable FDI inflows. Despite clearer and more stable progress than some other countries,

L. V. P. Dao (✉)
Quy Nhon University, Binh Dinh, Vietnam
e-mail: daovuphuonglinh@qnu.edu.vn

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Vietnam is now facing new challenges. Economic growth and the movement of jobs from agriculture to other sectors show signs of slowing down. Productivity growth used to be the main driver of Vietnam's economic growth in the early years of innovation, which has declined over the past decade, and the rate of labor productivity growth has slowed. The strong growth in the number of enterprises, and the number of capital and labor, but with different speeds, leads to a change in the size of enterprises. Specifically, there is a narrowing of the labor scale in most industries, focusing mainly on industries that were previously considered labor-intensive industries such as agriculture, forestry and fisheries, mining industry, construction, transport, and processing industry. The fact that industries previously considered the labor-intensive sector have narrowed to average labor size raises an important issue that Vietnam still relies on labor-scale advantage to maintain economic development. Is there a shift, replacing labor with technological machinery in these industries? And what is the optimal scale of business in technology applications?

This paper examines the impact of factors on labor productivity, focusing on the two globalization regimes that Vietnamese enterprises pursue which are FDI and exports. These are also the two channels that apply and spread technology from abroad. Growth theories with the beginning of Findlay (1978) appreciate the role of technology applied to the economy, and its importance continues to be confirmed through Lucas (1988) theories, Romer (1994), and Chen and Shimomura (1998). In Vietnam, there are also many empirical studies showing that the influence of technology application is the source of productivity growth and contributes to the increase in labor productivity. Ngo (2017), when studying export activities, innovation activities, and business environment that affect productivity of Vietnamese SMEs, shows that enterprises applying innovation activities have a good impact on labor productivity. Therefore, there is little doubt about the impact of technology on developing economies. One issue that needs more attention is the way in which technology is applied, as there are many channels that apply different technologies, and one of them has a more effective effect than others.

FDI enterprises, especially multinational companies, are an important tool in applying technology because they have outstanding advantages in terms of technology. Wang and Blomtrom (1992) assert that multinational companies become important agents in the creation and transfer of modern technology. In addition to the direct impacts on the economy, FDI enterprises can also indirectly create long-term effects on the manufacturing industry in the host country. Caves (1974) model recognizes the existence of a spillover effect within the sector of FDI in the production of many countries. Through the ability to leak, disseminate, and share information actively or passively, FDI can indirectly improve the productivity of enterprises, thereby improving the labor productivity of workers. However, multinational companies can also create negative impacts on businesses in host countries. Aitken and Harrison (1999) show that foreign direct investment has two different effects on productivity growth, taking place simultaneously. One is that the positive effect is the result of technology transfer and spillover and the other is the negative competition effect, which seems to be determined by increasing competition from

foreign companies. The total output of local businesses is reduced because they have to separate the market from new entrants.

Another technology application channel also affects labor productivity through international trade, which is exported. Most current theories and applied studies suggest that exports have a positive effect on labor productivity, meaning that a country with a high export performance has a better growth record (World Bank 1993; Melitz 2003; Bernard et al. 2003; Papadogonas and Voulgaris 2005). However, some studies suggest that free trade hinders the growth of productivity of developing country businesses due to the lack of comparative advantage, poor competition, and learning that doesn't keep pace with the trends of the world (Young 1991), or no evidence is found that exports help increase the productivity of firms in both self-learning or self-selection mechanisms (Wernerfelt 1984; Greenaway et al. 2005; Sharma and Mishra 2015). Therefore, the effect of exports on developing countries may be vague. As such, it is important to consider both channels of application of this competitive technology as they are still seen as the key to success for developing countries, especially new economies such as East South Asia including Vietnam.

Similar to FDI and exports, empirical research on the effects of size on labor productivity gives different results. A small number of authors such as Dhawan (2001), Tornatzky and Fleischer (1990), Acs and Audretsch (1991), and Arvanitis (1997) argue that small businesses are more productive in part because of greater organizational flexibility, higher risk and organizational responsiveness, and flexibility in the pace of innovation. In addition, most authors argue that larger firms must be more productive, with greater efficiency, greater capital intensity, and higher intermediate input intensity, so these firms' labor productivity will be higher. There are many studies that have yielded this positive result (Baldwin and Sabourin 1998, 1998; Oi and Idson 1999; Chowhan 2005; Crespo and Fontoura 2007).

The influence of determinants of labor productivity may vary between firms of different sizes and levels of capital intensity. However, at present, there are no studies in Vietnam that study and compare them separately. Existing studies often merely consider the impact of either FDI or exports on firms as a whole without considering and comparing the specific effects of FDI and exports on firms that have different sizes and levels of capital intensity. First, the study relies on the distribution of the number of enterprises and the level of the capital intensity of enterprises in the Vietnam Enterprise Survey dataset to select two sub-sectors in the manufacturing and processing industry to represent for two industries with different levels of capital intensity. Specifically, enterprises in the apparel sector represent labor-intensive industries and fabricated metal product industries representing capital-intensive industries. After that, the research conducted regression analysis and compared the impact of FDI and exports on the labor productivity of each industry. The study found that, for labor-intensive industries, the appearance of FDI for a firm in the industry has an impact on its labor productivity. Specifically, it increases the labor productivity of enterprises, while labor-intensive enterprises exporting or not exporting do not change the labor productivity of enterprises. At the same time, labor-intensive FDI enterprises are smaller than industry requirements, needing to

increase the size of enterprises if they want to increase labor productivity. In contrast, for the capital-intensive industry, the appearance of FDI for an enterprise in the industry does not change the labor productivity of that enterprise, but the export to the foreign market of the capital-intensive industry brings positive meaning to the productivity of enterprises in this industry. However, at present, the scale of exporting enterprises's the capital-intensive industry is too large, to increase enterprise labor productivity, therefore, reduce the size of enterprises in the context of other factors unchanged. There is no difference in labor productivity with different firm sizes, or firm size does not affect the labor productivity' firm.

In the next section, Sect. 2, the paper provides an overview of relevant literature, data, and empirical methodology that are described in detail, respectively. Baseline estimates and robustness checks are discussed in Sect. 3. Finally, Sect. 4 contains concluding remarks and extensions.

2 Methodology

2.1 Data

The study utilizes panel data consisting of SME and large enterprises of the manufacturing and processing industry from the VES period 2015–2016.

The data set of the study selects only two sub-sectors in the representative manufacturing and processing industry group to analyze labor-intensive and capital-intensive industries because different sub-sectors have different characteristics that the indicators indicate. The number of observations cannot be measured, and economic theory suggests that it is best to include only firms that are homogeneous to avoid endogeneity (Rogers and Tseng 2000). The research uses two sectors to represent the two sub-sectors in the manufacturing and processing industry, namely, the apparel industry and the manufacturing of metal products, in which apparel sector represents labor-intensive industries and fabricated metal product industry represents capital-intensive industries. These were selected by calculating the total number of assets in the industry divided by the total number of employees in the industry $\frac{\sum K_j}{\sum L_j}$ and based on the frequency of the number of enterprises in the sub-sector included in data.

2.2 Methodology

To estimate labor productivity at the enterprise level, the Cobb–Douglas production function model is used to estimate along with the impact variables. According to Arshada and Malika (2015) and Rogers and Tseng (2000), the Cobb–Douglas function is suitable to analyze labor productivity with data at the firm and industry

level. According to Ngo (2017), the synthesis of words when using the Cobb–Douglas function form to estimate productivity will be simpler and avoid the multi-collinear problems in the model than the Translog function type.

According to Rogers and Tseng (2000), when starting to analyze labor productivity, the most common method of empirical research is to start from the production function—in the form of the most general production function Y (representing the output) and X (the vector representing the input variables). According to Griliches (1986), Y should be measured by the added value of the firm.

$$Yit = A.K_{it}^{\alpha}L_{it}^{\beta} \tag{16.1}$$

With the assumption of constant returns to scale: α+β=1, we can rewrite Eq. (16.1):

$$\mathrm{Yit} = \mathrm{A}.K_{it}^{\alpha}L_{it}^{(1-\alpha)} \tag{16.2}$$

where Y is the added value of enterprise at time t, Kit is a capital input that can consist of knowledge or physical capital, Lit is labor, and Ait is a set of performance variables for firm i at time t, and α and (1-α) are the elasticity coefficient showing the level of responsiveness of the output of capital and labor, respectively.

In many studies, including Griliches (1986), knowledge capital is considered a cumulative research capital and still has productivity. The knowledge capital is understood to include past investments in innovation, organizational techniques, the human capital of both managers and employees (where human capital refers to education, training, and business) and experience, in addition to R&D investment. All of these types of investments have the potential to affect a company's added value. Typically, data for this type of capital are not available, so in case of empirical research, studies focus on a limited form of the model (16.1) with explanatory variables of interest to the research (Rogers and Tseng 2000). Dividing two sides of Eq. (16.1) by the number of employees to get labor productivity (because it is calculated by the increase per worker), we have:

$$\frac{Y_{it}}{L_{it}} = \mathrm{A}\left(\frac{K_{it}}{L_{it}}\right)\alpha \tag{16.3}$$

Logarit Eq. (16.3), we have

$$\ln\left(\frac{Y_{it}}{L_{it}}\right) = \ln\mathrm{Ait} + \alpha\ln\left(\frac{K_{it}}{L_{it}}\right) \tag{16.4}$$

where $y_{it}=\frac{Y_{it}}{L_{it}}$ and $k_{it}=\frac{K_{it}}{L_{it}}$. Now y is the labor productivity of firm i at time t and k_{it} is the firm's capital intensity at time t.

Rewrite Eq. (16.4) in linear form as follows:

$$\ln yit = \beta 0 + \beta kkit + \beta i \sum X_i + \varepsilon it \tag{16.5}$$

where $\ln y_{it}$ is the base log e of the labor productivity of firm i at time t, $\ln A_{it} = \beta_0 + \varepsilon_{it}$, and $\sum X_i$ represents the control variables representing the firm's characteristics.

To study the impact of FDI and exports on labor productivity, Eq. (16.5) is rewritten as follows:

$$\ln yit = \beta 0 + \beta 1 \mathrm{FD}Iit + \beta 2 \mathrm{X}it + \beta i \sum X_i + \varepsilon it \tag{16.6}$$

There are many methods for estimating Eq. (16.6), each of which has different advantages and disadvantages for analyzing a data set. The pooled OLS method will estimate in the case when some necessary adjustments are made to control possible heterogeneity. However, pooled OLS estimates involve control uncontrolled variables, failure to take into account the specific characteristics of businesses and their changes over time and thus may lead to concerned about correlation, biased estimates. Moreover, OLS estimates may be inconsistent in the case of FDI spillover effect analysis if productivity shocks affect the inputs used in firms (Konings 2001). Therefore, to overcome some shortcomings of pooled OLS estimation and to avoid biased econometric results, the fixed-effect model (FEM) and the random effect model (REM) will be estimated replace in this study. These estimation methods allow control of unobserved fixed effects of individuals, firms, and regions (Wooldridge 2002). Especially FEM estimate is also important to control potential selection problems or endogenous problems that can occur if foreign investment or export occurs in domestic companies and manufacturing industries that have the highest productivity (Konings 2001). Different from the FEM, the REM assumes that the industry and enterprise's unobserved effects are incompatible with each explanatory variable at any time (Wooldridge 2002). To select between FEM and REM, we will use the Hausman test. FEM's fixed impact estimates are expected to be appropriate if we have enough variables among the key variables in the data.

From the general model built by the Cobb–Douglas function, besides FDI, exports, the level of the capital intensity of the industry, and size, labor productivity is also affected by the specific factors of the enterprise. Based on studies (Hsu and Chen 2000; Rogers and Tseng 2000; Wagner 2007; Vahter, 2004; Greenaway et al. 2005; Doraszelski and Jaumandreu 2013; Arshada and Malika 2015; Ngo, 2017; Pham, 2018) and data so paper gives add control variables groups in model including human capital variables; industry characteristics variables and location variables.

$$\begin{aligned} \mathrm{Ln}y_{it} = {} & \beta_0 + \beta_1 \mathrm{FDI}_{it} + \beta_2 \mathrm{X}_{it} + \beta_3\, \mathrm{X_i FDI}_{it} + \beta_4 \mathrm{Size_i} + \beta_5 \mathrm{FDI}_{it} \mathrm{size}_{it} \\ & + \beta_6 \mathrm{X}_{it} \mathrm{size}_{it}\, \beta_7 \mathrm{X}_{it} * \mathrm{FDI}it * \mathrm{size}it + \beta_8 \mathrm{Cap}_{it} + \beta_9 \mathrm{FDI} * \mathrm{cap}_{it} \\ & + \beta 10 \mathrm{Xi} * \mathrm{tcapit} + \beta 11 \mathrm{Capit} * \mathrm{Xit} * \mathrm{FDI}it + \beta_{12} \mathrm{QUA}_{it} \\ & + \beta_{13} \mathrm{Region} + \beta_{14} \mathrm{Area} + \beta_{15} \mathrm{Ower}_{it} + \varepsilon_{it} \end{aligned} \tag{16.7}$$

3 Result

To analyze the different impacts of FDI and export on labor productivity of enterprises with different sizes and levels of capital intensity, regression studies for each different industry group. Specifically, the apparel industry represents labor-intensive industries, and fabricated metal product industry represents capital-intensive industries.

Since the number of enterprises receiving FDI and non-exporting capital makes up a small number in the sample, we can reduce this case. In addition, there are no state-owned enterprises in the apparel and fabricated metal product industry; thus there is not types status enterprise variable in the model. Equation (16.7) can be rewritten as:

$$\begin{aligned} \mathrm{Lny}_{it} = {} & \beta_0 + \beta_1 \mathrm{FDI}_{it} + \beta_2 \mathrm{X}_{it} + \beta_3 \mathrm{Size}_i + \beta_4 \mathrm{FDI}_{it} \mathrm{size}_{it} + \beta_5 \mathrm{X}_{it} \mathrm{size}_{it} \\ & + \beta_6 \mathrm{Cap}_{it} + \beta_7 \mathrm{FDIcap}_{it} + \beta_8 \mathrm{X}_{it} \mathrm{cap}_{it} + \beta_9 \mathrm{QUA}_{it} + \beta_{10} \mathrm{Region} \\ & + \beta_{11} \mathrm{Area} + \varepsilon_{it} \end{aligned} \tag{16.8}$$

For panel data, the paper uses the FEM and the REM to examine the impact of FDI and exports on labor productivity for each sub-sector. To select which method is appropriate for the research data, the study uses the Hausman test (1978) (Baldwin and Sabourin 1998; Gujarati 2004). The Hausman test gives the hypothesis H0 and H1 is stated:

Ho: difference in coefficients not systematic;

When the null hypothesis is rejected, we can use REM.

Hausman test result for garment industry is 34.08 with p_value = 0.0001 <0.05 and for fabricated metal product industry 35.14 with p_value = 0.0001 <0.05. Therefore, the FEM is suitable for analysis.

3.1 Apparel Industry

The empirical results of FEM (1) in Table 16.1 reveal main findings as follows:

Firstly, firms exporting to foreign markets have a productivity that is not different from those that only supply the domestic market (the coefficient is not significant at 10%).

Secondly, firm size (measured by logarithm of the enterprise's asset) does not affect firm productivity in the apparel industry.

However, among FDI enterprises, firm size has a positive effect. $\widehat{\beta}_4$ of interaction variable FDI*size $\widehat{\beta}_4 = 2.849$, with significant level at 1%. When other factors are constant, and if assets of FDI enterprises increase by 1%, their labor productivity will increase by 2.849%. But the coefficient $\widehat{\beta}_5$ of the interaction variable X* size is not statistically significant. This means that the impact of size on labor productivity is not affected by whether apparel enterprises export is not.

Table 16.1 FEM and REM estimation model results

Labor productivity	The apparel industry's model		The fabricated metal product industry's model	
Variables	Coef (1) (FEM)	Coef (2) (REM)	Coef (3) (FEM)	Coef (4) (REM)
FDI	−14.424***	−0.158	−1.411	−1.5326
Export (X_{it})	1.311	0.307	8.2453***	3.2977***
Quy mô doanh nghiệp ($size_{it}$)	0.028	-0.042	0.1941	0.0821***
FDI*size	2.849***	0.072	0.0922	0.1150
X*size	−0.147	−0.037	−0.5572**	−0.2675***
Capitalization (Cap_{it})	0.538***	0.536**	0.8119***	0.6047***
FDI*cap	−2.871***	−0.161	0.0369	0.0199
X*cap	0.096	0.065	−0.2834	−0.0422
Labor quality (Qua)	0.007***	0.003**	0.0098***	0.0063***
Central		0.045		−0.0686
South		0.171***		0.0497
Industrial area	0.477	−0.073	0.5239	0.0952
Constant	−0.734	0.559	−3.5650***	−0.9451***

Note: The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively

Table 16.2 The size of FDI enterprises and non-FDI enterprises of apparel industry

Size	Freq	Mean (million dong)	Min (million dong)	Max (million dong)
FDI enterprise	630	104,478.9	612	3,783,404
Enterprise without FDI	3087	30,255.84	43	2,918,683

Source: Author's compilation from Vietnam Enterprise Survey 2015–2106

Thirdly, even though this is a labor-intensive industry, the regression results show that the higher the capitalization level per worker, the more labor productivity increases. When other factors are constant, the amount of capital per worker increases by 1%, and labor productivity increases by 0.538%.

While the size of FDI firms has a positive effect on labor productivity, the capitalization of these firms has a negative effect on productivity when other factors are constant. The beta coefficient of interaction variable FDI* cap = −2.871, with significant level at 1%. This suggests that in the context of other factors that do not change, FDI enterprises in the garment industry want to increase labor productivity by 1% to reduce the capitalization level per worker to 2.871%.

The results of Tables 16.2 and 16.3 show that, when investing in Vietnam, FDI enterprises tend to invest in large-scale enterprises and the level of capitalization per employee is much lower than in domestic enterprises. Evidence shows that FDI enterprises are three times larger than the size of non-FDI enterprises, but the capitalization level of each FDI enterprise is only one-third of that of FDI

Table 16.3 The level of capitalization of FDI enterprises and non-FDI enterprises in the apparel industry

Capitalization level	Freq	Mean (million dong/employee)	Min (million dong/employee)	Max (million dong/employee)
FDI enterprise	630	150.993	8.076	4736.5
Enterprise without FDI	3089	384.75	6.9	3178

Source: Author's compilation from Vietnam Enterprise Survey 2015–2016

Table 16.4 Mean level of size and level of capitalization of FDI enterprises in the apparel industry

Name variable	Freq	Mean
Size	630	10.522
Cap	630	4.473

Source: Author's compilation from Vietnam Enterprise Survey 2015–2016

enterprises. Suggestions from the empirical results of the model continue to support this investment trend of FDI enterprises, that is want to increase the productivity of FDI enterprises or continue to increase the size of enterprises further or further decrease the level of capitalization on labor for the apparel industry in particular or the labor-intensive industry in general.

Again, the coefficient of the interaction variable X*Cap (export * capitalization level per labor) is not statistically significant, implying that the export of apparel products does not change the impact of capitalization on labor productivity.

Thus, all variables related to exports are not statistically significant, which again suggests that the export of garments in particular and labor-intensive industries in general does not affect the labor productivity of enterprises of this sub-sector.

Fourthly, FDI has changed the labor productivity of garment enterprises is FDI * ($\beta_1 + \beta_4 Size_{it} + \beta_7 \text{Cap}_{\text{it}}$), when other factors are constant (Table 16.4). If we consider enterprises with average size and capitalization in the sample, the impact of FDI will be $\widehat{\beta}_1 + \widehat{\beta}_4 \overline{\text{Size}} + \widehat{\beta}_7 \overline{\ln(K/L)_{it}} = -14.424 + 2.833^* 10.523 - 2.867^* 4.473 = 2.688$.

This means, for labor-intensive enterprises, FDI enterprises have higher average labor productivity than domestic enterprises.

Sixthly, exports have changed the labor productivity of apparel enterprises X * ($\beta_2 + \beta_5 \text{Size}_{\text{it}} + \beta_8 \text{Cap}_{\text{it}}$), when other factors are constant. However, all three coefficients β_2, β_5, and β_8 are not statistically significant at levels 1%, 5%, and 10%. These results show that, for the apparel industry in particular or capital intensive in general, there is no difference in labor productivity of exporting enterprises and domestic enterprises, regardless of business size or level corporate capitalization which is different.

Thus, for apparel enterprises, FDI-receiving enterprises have higher average labor productivity than those that do not receive FDI. At the same time, if the assets (size of the business) in FDI enterprises in this industry increased by 1%, the productivity of these businesses will increase by 2.849%, or the labor productivity will increase

by 1% if capitalization per worker is reduced by 2.871% in the condition of other factors unchanged. Meanwhile, garment-exporting enterprises do not change labor productivity compared to those that only supply to the domestic market, and the export of apparel products do not change the impact of both firm size and level of capitalization on labor productivity.

3.2 *Fabricated Metal Product Industry*

The empirical results of FEM (3) in Table 16.1 reveal main findings as follows:

Firstly, for fabricated metal product industry, in the context of other constant factors, FDI firms have labor productivity similar to those that do not receive FDI, the coefficient of impact no statistical significance level at 10%.

Secondly, similar to the apparel industry, firm size (measured by logarithm the firm's assets) had no effect on firm labor productivity.

However, for this sector, the size of the exporting enterprises has a negative effect on labor productivity ($\widehat{\beta}_5$ of the interaction variable X*size, $\widehat{\beta}_5 = -0.0559$, and significant level at 1%). This means that when other factors are constant that the assets (firm's size) of exporting enterprises decrease by 1%, their productivity will increase by 0.0559%. Looking at Table 16.5, the exporters of this sector need to downsize if they want to increase labor productivity because their size is now too large; they are 12 times larger than the size of the firm in the same industry but not exporting.

The exporting enterprises need to reduce the scale to increase labor productivity; the coefficient $\widehat{\beta}_4$ of the interaction variable FDI* size is not statistically significant. It implies that the effect of size on labor productivity is not affected by whether the enterprise is an FDI enterprise or not.

Thirdly, this is a sub-sector with capital-intensive characteristics so the regression results show that the higher the capitalization level per employee, the more labor productivity will increase ($\widehat{\beta}_6 = 0.8132$ and significant level at 1%). When other factors are constant, the capital amount per worker increases by 1%, and the labor productivity increases by 0.8132%. This is also one of the biggest factors affecting the labor productivity of enterprises producing products from cast metals.

Although capitalization per worker has a positive effect on the firm's labor productivity, but FDI*cap và X*cap variables are not statistically significant level

Table 16.5 The size of exporting and non-exporting enterprises in the manufacturing of metal products

Whether to export or not	The average asset of the business	The average value of the logarithms of the enterprise's assets
Export	148,459.2	10.712
No export	12,350.9	8.815

Source: Author's compilation from Vietnam Enterprise Survey 2015–2016

Table 16.6 The average size and the average capitalization of exporting enterprises of fabricated metal product industry

Variable	Freq	Mean
Size	818	10.71163
Cap	818	6.57714

Source: Author's compilation from Vietnam Enterprise Survey 2015–2016

at 10%. These results suggest that the impact of the capitalization level on each labor on labor productivity is not affected by whether the enterprises export or receive FDI.

Fourthly, exports change the labor productivity of enterprises in this sector by a level of X *($\beta_2 + \beta_5$ $Size_{it} + \beta_8 Cap_{it}$), when other factors are constant. However, since X_{it}*Cap_{it} is not statistically significant, the impact of exports is X * ($\beta_2 + \beta_5$ *Size*). If we consider a medium-sized firm in the sample, the impact of export X would be $\widehat{\beta}_2 + \widehat{\beta}_5 \overline{Size} = 8.2602 + (-0.5559*10.71163) = 2.3056$. This makes sense, for the firms in fabricated metal product industry in particular or the firms in capital-intensive industry in general; the firms with exports have average labor productivity higher than businesses that only produce and supply to the domestic market (Table 16.6).

Fifthly, FDI has changed the labor productivity of fabricated metal enterprises FDI * ($\beta_1 + \beta_4$Size + β_7Cap), when other factors are constant. However, all three coefficients β_2, β_5, and β_8 are not statistically significant at levels 1%, 5%, and 10%. This result shows that, for fabricated metal industry in particular or the capital-intensive industry in general, there is no difference in labor productivity of FDI enterprises and non-FDI enterprises regardless of size or level of capitalization.

Thus, for enterprises producing products from prefabricated metal, enterprises exporting to foreign countries have higher average labor productivity than those that only produce and supply to the domestic market. In addition, if the size's export firms of this sector decreased by 1%, the labor productivity of these firms will increase by 0.00599% under the condition of other factors unchanged. Meanwhile, FDI enterprises' this industry does not differ in labor productivity compared to enterprises that do not receive FDI at the same time that FDI enterprises don't change the impact of firm size as well as the level of capitalization on labor productivity.

4 Conclusions and Discussion

In this paper, I explored the differences in the impact of FDI and exports on labor productivity of firms that have different sizes and levels of capital intensity using firm level data from Vietnam enterprises for the period 2015–2016. In this period, Vietnam became increasingly liberalized in terms of trade, financial markets, investment laws, and the legal framework. As such, it represents an ideal case study for

exploring the impact of technology adoption channels from globalization regimes to labor productivity. There are two key focuses of our analysis:

First, for labor-intensive industries, the appearance of FDI for a firm in the industry has an impact on firm labor productivity. Specifically, it increases the labor productivity of enterprises, while enterprises exporting or not exporting do not change labor productivity. At the same time, for the labor-intensive industries, FDI enterprises that want to increase labor productivity need to increase the size of the business further or reduce the level of capitalization per worker under conditions of other factors unchanged. This may imply that labor-intensive firms that attract FDI will be more effective than seeking to export their products to foreign markets. In addition, FDI enterprises need to invest in large-scale enterprises as much as possible or enterprises with higher labor intensity and better labor productivity.

In contrast, the labor-intensive industry, in the capital-intensive industry, the appearance of FDI for an enterprise in the industry does not change labor productivity but that is the exporting to foreign markets. It has a positive meaning for the labor productivity of enterprises in this industry. However, at present, the scale of exporting enterprises of the capital-intensive industry is very large, so if an exporting enterprise wants to increase labor productivity, they should reduce the size of enterprises in the context of other factors unchanged.

Second, firm size does not generally affect the enterprise's labor productivity. However, for labor-intensive industries, FDI enterprises need to expand their production scale even more than non-FDI enterprises if they want to increase labor productivity under other factors unchanged. In addition, capital-intensive export enterprises are now too large in scale, so if they want to increase labor productivity, they should reduce the firm's size.

In addition, research shows that the quality of labor has a positive effect on labor productivity in both capital-intensive and labor-intensive industries. This is reasonable because this is an important input to the production results of the business, and also improving the quality of labor will contribute to creating positive diffusion effects for enterprises. Such as workers with higher education levels will make the effect of the allocation of inputs better or a more knowledgeable worker will have the way of maximizing products that increase their marginal productivity value over the same production process that employs lower knowledge workers. A worker with a higher level of education will be able to develop innovative research and development research and then itself is an input that directly affects labor productivity.

Similar to labor quality, capitalization has a positive effect on both capital-intensive and labor-intensive industries because capital intensity represents the financial potential of each business (Eatwell et al. 1990). Because capital and labor are complementary inputs, firms with high capital intensity are expected to be more productive in terms of the same factors. In addition, enterprises with conditional capital are able to pay higher salaries for workers, and along with that, they can invest in facilities as well as R&D activities in service for better production.

Whether the enterprise is located in an industrial zone does not affect its labor productivity in both capital-intensive and labor-intensive industries. This suggests

that, at present, industrial parks and export processing zones in Vietnam have not done well the task of promoting spillover effects among enterprises, especially the technological spillover effects of FDI and learning effects to export.

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Chapter 17
A Fuzzy Logic Approach to Career Orientation for Students: A Case Study in Human Resource Management

Thi-Lich Nghiem, Thi-Ha Dinh, and Thi-Lien Nguyen

Abstract Currently, organizations and individual people recognize the capacity of the workforce considered a primary factor to gain their competitiveness and their reputation in the domestic and international markets. Identifying students' career orientation is very important to customize Human Resource Management depending on these orientations. It should be concerned because it effects on students, families, universities and the development of society. The wrong career direction results in unfavorable life. Although few fuzzy logic approaches had achieved promising results in personnel selection, this issue has still not solved completely and successfully yet by the existing methods. They face a great deal of difficulties and challenges such as a subjective criteria selection, not based on Human management model, in some cases, it could reduce the accurate result. We present orientated-career issues, conduct a survey of students' ability to meet professional requirements for businesses based on ASK model and a learning outcome standard. A novel approach is proposed to improve the performance of career orientation and test data based on the information of students in a Human Resource Management major at a university. Study results suggest that the oriented-career performance has improved spectacularly compared to other methods.

Keywords ASK · Fuzzy logic · Career orientation

1 Introduction

In recent years, career orientation has become one of the interesting topics and has received much attention from researchers, businesses, universities, and students. It is believed that career orientation is customized Human Resource Management (HRM) practices founding on these orientations (Afshari et al., 2014). These days, students

T.-L. Nghiem (✉) · T.-H. Dinh · T.-L. Nguyen
Thuongmai University, Hanoi, Vietnam
e-mail: lichnt72@tmu.edu.vn

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hava more chance to expose with many features related with their career decisions. It is impacted by some factors such as interest, situational aspects, parent, school, gender, passion, etc. (Natividad et al. 2019). In addition, their preferred job selection, family, and teachers have a positive effect on the students. Moreover, another impact is environmental factors such as friends, chance, their personality, and their ability.

Career orientation for students is a top concern because it not only is a vital importance for students, families, and school but also has a great meaning to society. Choosing an appropriate career can help students to have a bright future and become a potential employee in enterprises. It also helps universities enhance their curriculum and reputation. Otherwise, dissatisfaction, failure and unhappiness in the work-life may cause some psychological issues. One of the most important reasons of being unhappy at work is the mismatch between characteristics of jobs that are chosen by the individuals and their own characteristics. In the other words, it is wrong career choice itself. And this condition shows how important vocational guidance is (Aydan and Ali 2015).

Recently, in Vietnam, there are numerous universities that have applied the learning outcome standards in order to measure the standard level of knowledge and skills after graduation (Dúóng, 2010). However, with the achieved learning output standards at different levels, many students wonder what exactly they will do and where the position is in the future. For example, some students have high grades and position in their major but they still have not the right jobs. Although some students got high scores at their university, they do not find the right job or even unemployed. That is why career orientation plays a vital role in choosing the career of youth (Natividad et al. 2019; Aydan and Ali 2015; Nguyen et al., 2014) .

Normally, evaluation is to use in the selection or consultation process. The right evaluation can make the right choice. Although people evaluate by clear detailed points in many cases, it sometimes is not approximate, evaluating students' achievement or teaching method for example. It is difficult to evaluate by point. Therefore, it is necessary to have another appropriate evaluation (Ali et al., 2012; Bogdanovic & Miletic, 2015).

Using fuzzy logic to build an evaluated system or recommendation system is attracted by many researchers. This approach will cope with linguistic variables which are words having ambiguous meaning as human thinking (Natividad et al. 2019; Vo and Nguyen, 2014; Bui et al., 2018; Adnan & Mohamed, 2014; Aleksandra & Oleksandr, 2018; Alireza et al., 2010; Ayhan, 2013; Goztep et al., 2015; Hydeh & Hadis, 2010; Mohammad et al., 2011, Mohammad et al., 2017; Nilsen, 2016; Turkay et al., 2010). However, this approach is still based on sensitive factors and the total score during students' study, not based on a specific model. In this paper, we used fuzzy logic and the ASK model to build a career orientation for students at the university, especially HRM major. This model will help students to confidently join the labor market after graduating and meeting the learning outcome standards.

2 Literature Review

2.1 Career Orientation

Career is one of the main important decisions for people, especially students. It will determine their future plans affecting significantly their life (Maier et al., 1994). Choosing an approximate job is not easy because it is based on many factors. Moreover, an organization tends to be used more technological products in order to save the labor and the cost. So, it leads to reduce chances for occupation progression (Afshari et al. 2014). It makes students to difficultly choose a career path at an early age (Waghmode and Jamsandekar 2015). Thus, students should have an in-depth and thoughtful view of this, especially understanding the importance of career orientation.

Traditional careers refer to the advancement within a limited number of organizations, modern jobs reflect a new deal where the psychological agreement between employer and employee is created without promising the lifetime employment as well as maitaining job promotion (Seyed et al. 2014; Duong & Vu, 2017; Le & Nguyen, 2012). In these days, oriented-job employees have to participate in occupation self-management actions to generate job opportunities. It has a positive impact on realizing their individual job purposes like ensuring their employability.

2.2 ASK Model

One of the typical models used in human resource management is the ASK model. This related to individual competence in order to train and develop competence. ASK means attitude, skills, and knowledge which are presented professional standards for job titles in organizations. ASK model is first introduced by Benjamin Bloom in 1956 that formed the foundation of what personnel does as trainers and learning professionals with three key capabilities A, S, K.

Attitude is the first group that belongs to the emotional range. It includes the worldview's factors as receiving and responding to phenomena, determining value, and prioritizing values. Qualities and behaviors reflect an individual's attitude to work and, motivation as well as the qualities needed to perform a job well. The qualities are also determined the right position at work.

The second feature in the ASK model is skill being the ability to perform tasks based on the knowledge. According to Dave, skills are normally divided into four major levels such as mimicry (observation and stereotypical behavior), application (perform some actions by following instructions), manipulation (more accurate with each circumstance), creative use (becoming a natural reflex) (Dave 1975).

The final feature is knowledge which belongs to the capacity of thinking, including data collection, comprehension, application, analysis, synthesis, and evaluation. These are the basic competencies that an individual need to have at work. The

complex job will require high level of these capabilities. They will be specified based on the characteristics of each enterprise.

Recently, the ASK model is considered the most popular model to evaluate personnel in the recruiting process and counseling process. For students, the important thing after learning is to meet the requirements of the recruiter, meet the requirements of the job and take steps to develop a stable career. Therefore, each student needs to self-assess the criterion in order to have an effective plan for learning and developing themselves.

2.3 Fuzzy Set

Zadeh is the founder of a fuzzy set theory which can be consideredas an expansion of the classical crisp sets. It is to deals with problems in which a source of ambiguous, unclear and complex issues is involved in decision-making (Lofti Zadeh 1965).

In classical aggregation theory, is evaluated a binary form under an unambiguous condition can evaluate the membership of elements in a set—an element that the set has or not have it. On the contray, the membership relationship between an element and a set gradually is assessed by the fuzzy set theory; This relationship is described by a relational function $\mu \rightarrow [0, 1]$. Fuzzy sets are considered to be extended from classical set theory, for a given universe, a dependency function can assume a function's role mapping each element to a value of 0. or 1 as in the classic concept

Giving X universe withn elements, $X = \{x_1, x_2, \ldots, x_n\}$. A is called a fuzzy set in the X when A is a set of ordered pairs $A = \{(x_1, \mu_A(x_1)), (x_2, \mu_A(x_2)), \ldots, (x_n, \mu_A(x_n))\}$, where μ_A is the membership function of the fuzzy set A.

Formally,

$$\mu_A : \mathrm{X} \rightarrow \{0, 1\} : \mu_{\mathrm{A}}(\mathrm{x}) = \begin{cases} 1 \text{ if } \mathrm{x} \in \mathrm{A} \\ 0 \text{ if } \mathrm{x} \notin \mathrm{A} \end{cases}$$

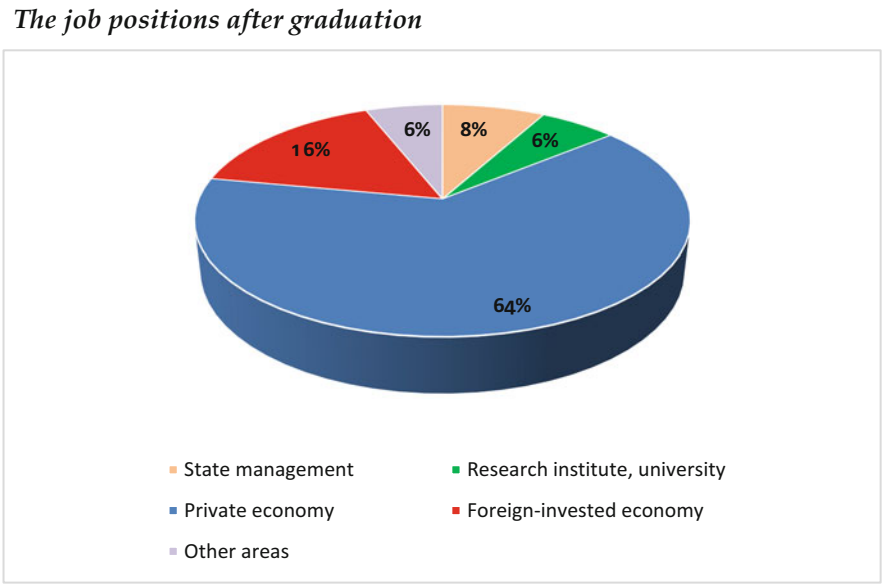
$\mu_A(x)$ is called the function of the set A, and recieves only one of two values, including 1 and 0. If A has x then $\mu_A(x) = 1$, otherwise $\mu_A(x) = 0$.

Fuzzy sets are based on fuzzy logic, an expansion of classical logic. If the classical logic uses only two values 0 and 1 to represent: 1 is true, 0 is false, then in fuzzy logic the value is in the range 0 and 1.

The fuzzy set $\widehat{F}$ is determined on a regular set X is a set whose each element is a pair of values $\mu_{\wedge F}(x)/x$ with $x \in \mathrm{X}$ and $\mu_{\wedge F}$ is mapped.

$$\mu_{\wedge F} : X \rightarrow [0, 1].$$

For example, the function of the fuzzy set B=$\{x \in \mathrm{R} | x << 6\}$ which looks like Fig. 17.1, included sets $\wedge F = \{(1/1), (1/2), (0.8/4), (0.07/6)\}$. Natural numbers 1 and 2 are inherited $\mu_{\wedge F}(1) = \mu_{\wedge F}(2) = 1$.



(Source: aggregated from authors' survey)

Fig. 17.1 Job position of graduate students at the organizations. Source: aggregated from authors' survey

3 Methodology

3.1 Survey Results

In order to evaluate the learning output standards and career orientation for HRM students, we surveyed over 150 students studied at HRM major at Thuongmai university in order to compare to learning outcome standards and the job information of these students after graduation. This survey was approved by the Thuongmai University, the Faculty of Human Resource Management, and students participating in the survey. In addition, de-identification pharse is used to protect students' identity at the cleaning data step before analysis. So some students' information such as name, age, ID student has been removed.

We divided into 17 criteria based on the learning outcome standards of HRM major. All criteria are evaluated with a scale from 1 to 5. All the results are shown by the following figures.

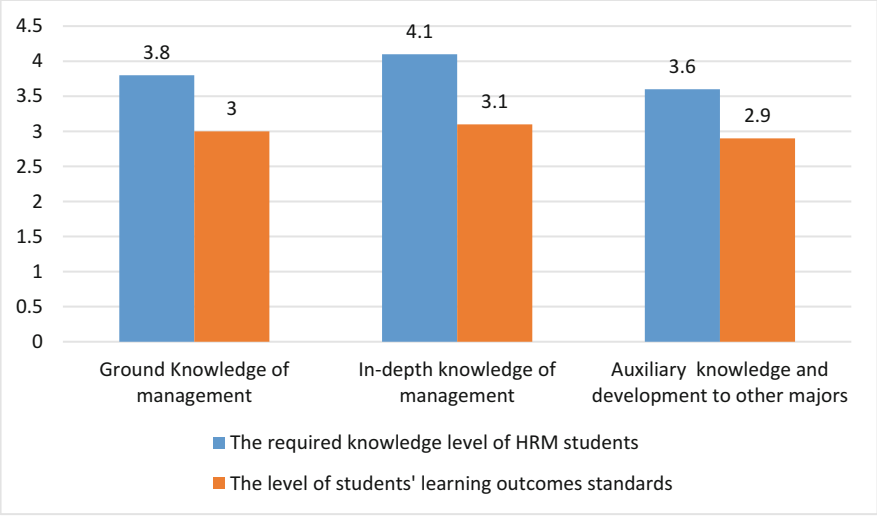
3.2 The Job Positions After Graduation

It is clear that the number of students working in the private economy sector accounted for largest proportion whereas that of the research institute, university, and other areas is the smallest percentage, 64% and 6% respectively. In addition, foreign-invested economy is the second attraction area for HRM students after graduation with 16%. The result showed that job position in the private economy is the most attractive to HRM students.

3.3 Assess the Necessity of A, S, K Features

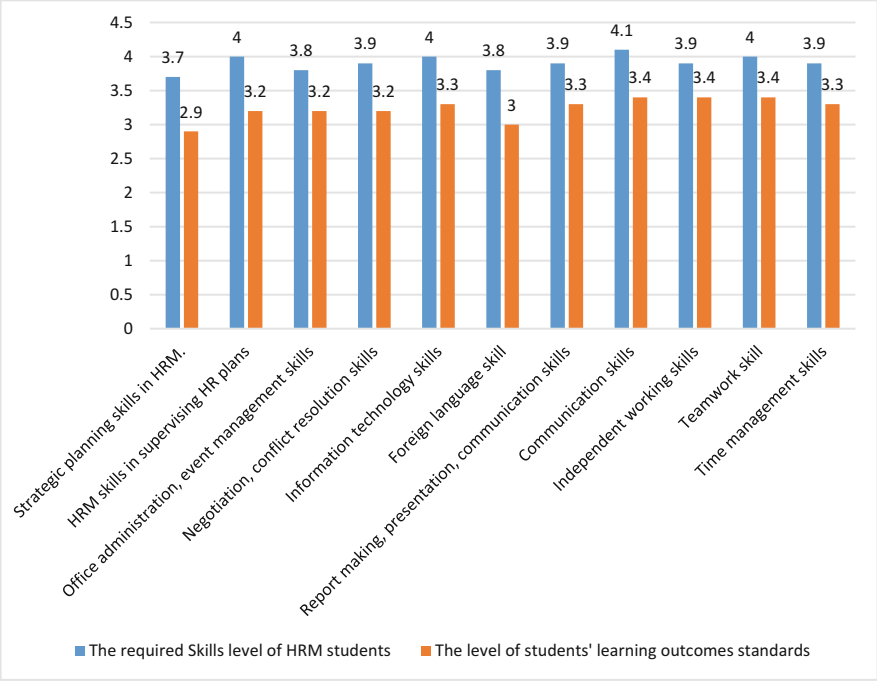
About the knowledge, Fig. 17.2 illustrates the differences between the required knowledge level of these students and the level of students' learning outcome standards. It can be seen that the first feature is always significantly higher than the rest feature. This is a big gap between two parts, especially with in-depth knowledge of management. The requirement of real enterprises needs to is 4.1 whereas students only got 3.1 in learning outcome standards level.

After collecting the data from a specific survey of over 150 HRM students, we summarized the information about their skills which are the required skills level of HRM students and the level of students' learning outcome standards. Interesting results are shown in Fig. 17.3.



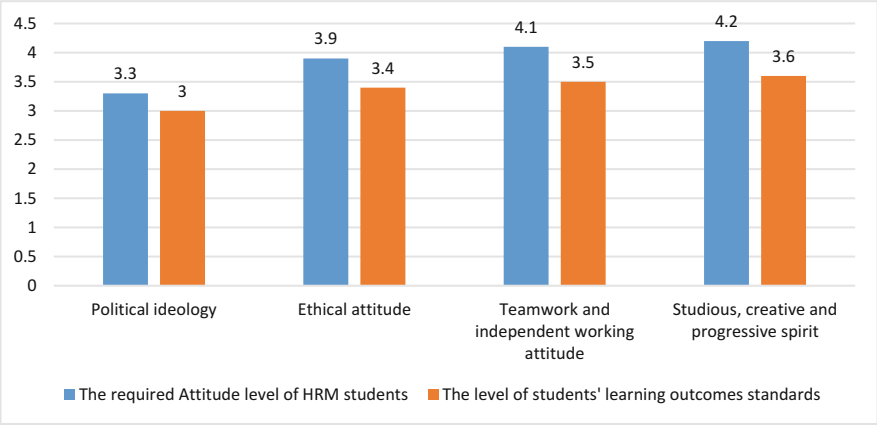
(Source: aggregated from authors' survey)

Fig. 17.2 The comparision between the required knowledge level of these students and the level of students' learning outcome standards. Source: aggregated from authors' survey



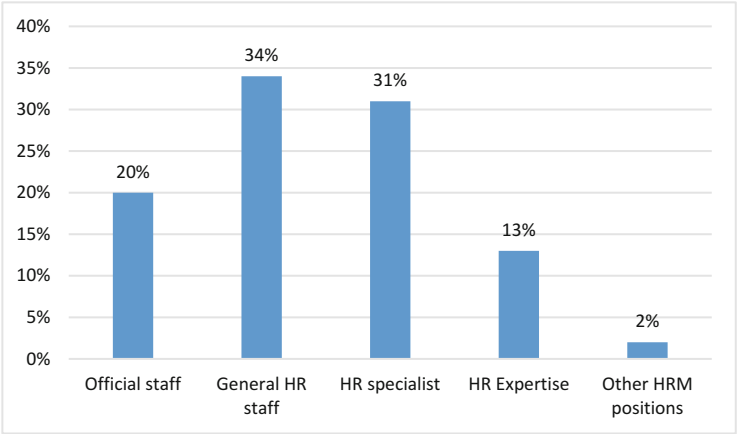
(Source: aggregated from authors' survey)

Fig. 17.3 The comparision between the required skills level of HRM students and the level of students' learning outcome standards. Source: aggregated from authors' survey



(Source: aggregated from authors' survey)

Fig. 17.4 The comparision between the required attitude level of HRM students and the level of students' learning outcome standards. Source: aggregated from authors' survey



(Source: aggregated from authors' survey)

Fig. 17.5 The employment needs of businesses for job positions in personnel recruitment. Source: aggregated from authors' survey

Figure 17.4 shows that the learning outcome standards of HRM students are slightly lower than the requirement of the enterprise. However, it is a good signal that graduates of human resources management have independent working skills that are quite good compared to actual requirements (3.4 versus 3.9).

About the Attitude, it seems to have a slight difference between the two parts, including the required attitude level and the learning outcome standards of attitude. There gradually differs between two levels. Therefore, this issue requires serious orientation for students at the university.

Besides surveying the A, S, and K criteria, we also surveyed the employment needs of businesses for job positions in personnel recruitment. The results show that most businesses nowadays tend to recruit employees who can do general HR jobs. Although they do not need to be too specialized, they need to have a ground knowledge of human resources management, solving manpower issues in a flexible and diverse manner. The results can be seen in Fig. 17.5.

In general, HRM students respond relatively well in knowledge, skills, and professional qualities when working in businesses and organizations surveyed. However, when assessing the competencies according to the A, S, K of learning outcome standards, students need to be fostered to meet job requirements, which focus mainly on professional knowledge, foreign skills, and soft skills.

When asked about solutions to improve students' ability after graduation to meet employers' requirements, the answers are mainly related to the learning outcome standards developed with employers, having more supplementary soft skills courses, training on personal qualities, etc.

3.4 Process and Frame Work

3.4.1 Methodology

This paper will present a novel approach to improve the job competitiveness for students based on the ASK model and the combination between fuzzy logic and SAW method.

3.4.2 Benefits of the Proposed Algorithm

Both enterprise and student will have the right position with selected qualified personnel. This is key and vital importance to business organizations, institutions, families, and society, especially to enhance the competitive reputation in the domestic and international market because of having a strong employee base.

For students: Choosing the right career with their abilities not only helps them to become potential employees. Because they may do not think about other chance of looking a new job.

For universities: The students choose the job that can help universities to verify their curriculum in order to improve the quality of teaching and learning. Therefore, they can update their curriculum to enhance their reputation.

For enterprises: A good recruitment process not only helps them to save time, investment costs for human resources but also enhances their competitiveness in the domestic and international markets. Because they can reduce the burden of decision-makers having to sit down for hours to shortlist and less money to retrain novices.

3.4.3 Data Collection

In order to present the advantage of our proposal, we collected the students' information from HRM faculty at Thuongmai University. This information is used largely for the purposes of testing.

3.4.4 The Process of Career Orientation

For effective career orientation, we proposed the combination of fuzzy logic and SAW method based on the ASK model. In this system, the function is ordered by the following:

Select the main criteria and sub-criteria based on the ASK model based on HRM learning outcome standards.

Enter the weight of each A, S, K feature.

Define dependency fuzzy value of the level of achievement of each student for all sub-criteria with three stages: fuzzification, fuzzy argument, defuzzification.

Build the matrix from the weight list

Use the min-max operator on the weight matrix and evaluate the appropriate fuzzy values

Assess the level of achievement of each student based on the total weight

Best career hints for students based on a certain threshold.

Algorithm

Input: The values of standard fuzzy sets E, V, G, S, U, main criteria's weight, and the sub-criteria's weight for each student.

Output: The total weight of each student and the suitable job.

Step 1. Input the values of the fuzzy sets E, V, G, S, U, the weight of main criteria (A, S, K), and the sub-criteria for each student.

Step 2. Enter fuzzy information according to each student's criteria.

Step 3. For each student's sub-criteria, calculate the point value:

For each criterion with the standards, calculate the similarity of the fuzzy values by the following formula:

$$S(N, F_i) = \frac{N * F_i}{\max(N * N, F_i * F_i)} \tag{17.1}$$

where N is the set of value for standard, F_i is the fuzzy set of each criterion.

Find the highest similarity by comparing analogues to standard. This value is the weight of the criterion.

Step 4: Calculate the scores based on the weight of all similar criteria of the ASK model according as follows:

$$T(F) = \sum_{j=1}^{n} \sum_{i=1}^{m} S_i W_j \tag{17.2}$$

where n is the main criteria, m is the sub-criteria based on ASK model, F is the fuzzy set of all criteria for each student, S_i is the largest similar value of the ith of sub-criteria in each of the main criterion, W_j is the weighted value of each criterion group A, S, K.

4 Empirical Analysis

4.1 Input/Output and Data Processing

The program is built based on C programming language and Microsoft Visual Studio 2010 environment (MVS 2010). *C* is a high-level procedural programming language with many advantages such as flexibility, flexibility, strong and quite condensed styling. Besides, MVS 2010 is a stable integrated environment and has a set of

effective support tools. They make it easy for users to build applications on one system, translate and run them on another system.

The input data are the values corresponding to each student's criteria. These are the fuzzy values in the segment [0,1] that are randomly generated and written to the file. To process the data, they are read from the file and written to an array of structures. Then, apply the SAW method to each student to calculate the corresponding total points. These values are in paragraphs [0,8] and are the program output values. They are written to the file for processing and statistics, as well as career placement for students.

4.2 Some Basic Functions of the Program

The program includes three modules: data, fuzzy_info and fuzzy_normal. Where the data module is a module that declares and defines components and functions for generating random data files, the fuzzy_info module is a module that declares and defines information structure components and manipulation functions for students. fuzzy_normal module is a module that defines and defines standards and calculation functions on the standard. Following are some of the main functions used in the program

```
Data creation function
void taotep (char * ten);
Combining the time (), srand () and rand () functions of C, this function
has the function of generating random values in the [0,1] segment
according to the current time.
Data reading function
void docdl (char * name, SV ds [], int * n);
```

This function has the function of reading student number (n) and specific information of each student from file (name) and putting it into array ds. In which each student is a nested structure (struct) describing 17 sub-criteria corresponding to the main criteria of the ASK model for HRM students.

```
The function calculates the square of the standards
float planet_nor_squared (const nor x);
For each set of standards, this function will return its square product
Standard similarity function
float planet_Sim (const nor x, nor y);
```

Using the result of the square root function and students' fuzzy information read from the file, this function calculates the standard similarity according to each student's criteria. The returned value of this function corresponds to the formula (17.1).

The function calculates the total score.

```
float Sum weight (float wei [17], float a, float s, float k);
```

Using the highest similarity value in all standards for each criterion and the weight of the ASK criteria set, this function will return the total score of each student according to all criteria. The returned value of this function corresponds to the formula (17.2).

4.3 Empirical Results

The experiment was tested on dataset including 10 students with 3 main criteria and 17 sub-criteria, and the weight of ASK set is in (0.2, 0.3, 0.5).

Input:

$n = 3$, $m = 17$

The value of five standard fuzzy sets as following in Table 17.1

10 students with 17 sub-criteria based on ASK model.

The weight of each ASK 0.2, 0.3, 0.5, respectively

The standard fuzzy sets used in this experiment includes five levels, including E, V, G, S, and U. The detailed values of each fuzzy set can be shown in Table 17.1.

This standard sets, the fuzzy set's value of each criterion are used to calculate the similarity of each criterion with the standard levels by the formula (17.1). Then, the highest similarity of each criterion is selected and applied to calculate the total scores based on the formula (17.2). It is shown that the weights of A, S, K criteria are 0.2, 0.3, and 0.5, respectively. Finally, the output are recommended jobs correspond to the total scores as in the Table 17.2.

The Output:

Based on these results, students can choose the right job after using career orientation system.

5 Conclusions

Fuzzy logic is considered as one of the most effective approaches in decision making problems. It can help administrators make the most scientific and objective decisions. This paper gave an overview of career orientation, fuzzy logic, and ASK model. This also presented the detailed results of a survey at Human Resource Management major. This survey has interesting results between the learning outcome standards as well as the required criteria of enterprises. In order to enhance the job competitiveness for students after graduation, applying fuzzy logic based on the ASK model is proposed in this paper. With 17 criteria according to learning outcome standards of HRM major, the experimental results showed that this proposal has achieved significant effective in career orientation. It can be a useful tool for

Table 17.1 The value of five standard fuzzy sets

Level	E (excellent)	V (very good)	G (good)	S (satisfied)	U (unsatisfied)
Fuzzy set	{0,0,0.8,0.9,1,1}	{0,0,0.8,0.9,0.9,0.8}	{0,0.1,0.8,0.9,0.4,0.2}	{0.4,0.4,0.9,0.6,0.2,0}	{1,1,0.4,0.2,0,0}

Table 17.2 The recommended job corresponds to total score

Student	Weight total	Jobs
S1	0.26	Official staff
S2	0.84	HR expertise
S3	0.86	HR expertise
S4	0.91	HR expertise
S5	0.95	HR expertise
S6	0.89	HR expertise
S7	0.75	HR specialist
S8	4.00	General HR staff
S9	4.18	General HR staff
S10	4.47	General HR staff

university, enterprise, and student as people working in the field of human resources management, researchers involved in human resource planning.

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Chapter 18
Downstream Market Equilibrium and Optimal Policy for the Conventional Food Distribution System in Vietnam: An Industrial Organization Analysis

Chi Thanh NGO

Abstract The theory of imperfect competition has largely focused on the growing of market power and the competition in agricultural market. Based on the context of Vietnam, this paper proposes an industrial organization model for developing countries in the particular case of oligopoly downstream market power in the conventional food distribution system. In this paper, we take several arguments from the theory of imperfect competition applied in agricultural economics. We assume that the intermediaries have market power at downstream of the food system. A small-scale farmer is defined by production function, while the behavior of the consumers is characterized by a discrete choice model; the inverse demand function is introduced linked to Mussa-Rosen-type model. Based on such consideration, we analyze the flow of quantity from small producers to consumers by the tool of Cournot competition and study the issue of the best choice of land reform policy instrument by productivity shock at downstream market equilibrium.

Keywords Vietnam economics · Food system · Industrial organization · Market power · Downstream

1 Introduction

The traditional food distribution system becomes very important for delivery of food to the cities in many developing countries (Maruyama 2010). For instance, in Vietnam, according to the General Statistics Office of Vietnam (GSO Vietnam (General Statistic Office Vietnam) 2018), as of 31 December 2018, there were 8475 markets nationwide. This conventional system distributes products from

C. T. NGO (✉)
Hong Duc University, Thanh Hoa, Vietnam
e-mail: ngochithanh@hdu.edu.vn

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small farmers to final market through several middlemen (e.g., collectors, transporters, wholesalers) and then to the retail sector (e.g., street markets, organized bazaar, frog market). Since most producers of these products are small farmers who only exploit small lands (for instance, among the total number of households using agricultural land, 36.1% of them were using under 0.2 ha per household; only 2.3% of them were using 5.0 ha or more per household (GSO Vietnam (General Statistic Office Vietnam) 2018)), the middlemen become a crucial factor in delivering products from farmer to cities and urban areas (Moustier 2007; Moustier et al. 2010).

Despite the fact that middlemen are the important factor to distribute products from farmers to the consumers, they are always thought to gain excessive profit from farmers by their market power (Mérel et al. 2009; Myers et al. 2010). Based on this observation, the objective of this paper addresses the question of how market power of middlemen affects the profit of farmers and the wealth of consumers. More precisely, our paper studies the case of downstream market power which is linked to the context of Vietnam in the situation that at the local town level, there are a big number of farmers producing foods and there are also many middlemen buying these products from farmers. In this situation, middlemen do not have oligopsony market power, but they have oligopoly power since these products are sold at their small shops.

It is largely recognized that imperfect competition is important in agricultural economics (McCorriston 2002; Sexton and Lavoie 2001; Myers et al. 2010). Therefore, our paper takes several arguments from industrial organization. The paper proposes theoretical model of middlemen behavior in downstream market power. Our assumptions mainly are that (1) in the downstream of the food distribution system, the intermediaries have market power, while the behavior of the consumers is characterized by a discrete choice model and (2) farmers are defined by a production function. We borrow the argument from Mussa-Rosen-type model to present the inverse demand function (Mussa and Rosen 1978). From that point of view, we construct the industrial organization model for developing countries focusing on the behavior of middlemen in downstream of conventional food distribution channel.

Under such consideration, we study the downstream market equilibrium to analyze trade quantity, price, and wealth of both producers and consumers. More precisely, we point out all the behaviors of middlemen at market equilibrium including the trade quantity, the prices (both prices paid by consumers and paid to producer), and also the profit of farmers and the wealth of middlemen in the food system. These results give us opportunity to analyze the behavior of middlemen at downstream of the food distribution channel. The result indicates that market power of middlemen directly affects prices (given to producers and sold to the final market). As a consequence, farmers' wealth becomes lower even if consumers are buying foods at a higher price.

Since lands are small and fragmented (Marsh et al. 2006; Pham et al. 2007; Nguyen 2012; GSO Vietnam (General Statistic Office Vietnam) 2018), we construct a model of land reform in order to create a productivity shock on the food supply market of the farmers. This policy can be an instrument to have an impact on both the

wealth of farmers and consumers. In our land reform model, we not only indicate the effect of this policy on farmers' and consumers' wealth but also show that there is the best choice of land reform instrument since middlemen have market power in the downstream of the traditional food distribution system.

For the subject of middlemen behavior and their market power, we can review several literatures. For instance, Mérel et al. (2009) emphasized that market power of middlemen can come from several factors and, in particular, transportation cost may be a crucial factor that leads to their market power. Masters (2007, 2008) shows that when the middlemen present in the market, they are welfare reducing; however, they can beneficial to society. Rubinstein and Wolinsky (1987) studied a model of a market with sellers, buyers, and middlemen, which highlighted the relation between the trading and the distribution of the gains from trade. Related to the issue of middlemen market power in food markets, Thanh (2017, 2018) proposed industrial organization model for developing countries. However, the question of middlemen behavior at downstream market equilibrium has not yet been addressed. This question is the interesting case of industrial organization linked to the context of Vietnam. That is the reason why this paper aims at studying the middlemen behavior in downstream market equilibrium of food market and proposing policy implication in order to intervene market imperfect competition.

By proposing the industrial organization model of middlemen behavior and their downstream market power, our paper contributes to the literatures of imperfect competition in agricultural market. This work also opens the prospective for research concerning policy instruments in order to intervene market imperfect competition.

2 Methodology

2.1 Imperfect Competition Framework

It is largely recognized that imperfect competition is important in agricultural economics (Sexton and Lavoie 2001; McCorriston 2002; Myers et al. 2010). Therefore, our work strategy is to use the tool of imperfect competition theory applied in agricultural economics. In fact, the concept of imperfect competition has largely focused on the growing of market power and the competition in agricultural market. Since the objective of this paper is to understand how market behaves and competes, this framework becomes a very important tool for us to not only understand the situation but also propose solution by using imperfect competition approach.

For the case of Vietnam, the role of imperfect competition in the analysis of the food market competition especially becomes more important since there is market imperfect competition linked to the context of Vietnam. For instance, (1) the number of small-scale farmers is very large to have only small market power or (2) foods are produced in different locations which are far from cities and urban areas where a big quantity of foods is consumed Wiersinga et al. 2006). As a consequence, farmers face with high transaction cost and therefore have very small market power to

bargain the price with the intermediaries who transport their products to the final market. That is the reason why this paper applied the theory of imperfect competition to address the question of middlemen behavior and their market power in the downstream of the traditional food channel.

2.2 *Theoretical Assumption of the Model*

The assumption and denotation of the industrial organization model is introduced as in Thanh (2017, 2018). Let us briefly recall some crucial characteristics of the assumption and denotation.

In the case of Vietnam, the food distribution channel is offended described by two main distribution channels which compete: a traditional and modern one. Most of the foods are transported to the market with two-wheel vehicle at low cost but without really taking care of the quality of the food. On the other side, the modern distribution channel often sells products at higher price with more standard of products. This is the reason why the author assumes the traditional market is a market with low quality compared to modern distribution channel. From that point of view, the author set assumption and denotation.

We assume that a farmer is characterized by production function

$$q = f(\lambda) = \sqrt{\lambda}$$

in which λ is the labor used and is set by normalization rule, which is $w = 1$; in this model, N small farmers produce the same products (homogenous) for the middlemen which will be finally sold in the market with low quality in the downstream of the food system.

Farmers produce products Q, and the total supply of foods is denoted by Q_m, while Q_ℓ is the quantity sold at the consumer market. When selling products for middlemen, the farmer receives the price P_{fm}. This price will be different and depend on downstream market power of middlemen. Since we assume that, in final consumer market, the intermediaries will sell all quantity buying from producers, which will implies that $Q_\ell = Q_m$. When selling at the final market, the price which middlemen receive is P_ℓ. We denote π_f^m as profit of middlemen and π_m as profit of farmers.

Based on such consideration, we firstly verify the inverse supply function of farmers. Since farmers receive the price P_{fm} paid by the middlemen, they will play the game; more precisely, they will maximize profit to optimal level of labor used. In fact, a farmer solves $\max \lambda P_{fm} f(\lambda) - \lambda$. The optimal labor used is given by $\lambda(P_{fm}) = \left(\frac{P_{fm}}{2}\right)^2$ and the individual food supply is $f(\lambda(P_{fm})) = \left(\frac{P_{fm}}{2}\right)$. Therefore, the total supply of foods $S_m(P_{fm})$ for the middlemen is respectively given as:

$$S_m(P_{fm}) = N\left(\frac{P_{fm}}{2}\right) \tag{18.1}$$

And the inverse supply function of farmers is:

$$P_{fm} = \left(\frac{2Q}{N}\right) \tag{18.2}$$

Middlemen, consumers, and demand: the author introduces m middlemen indexed i; we also assume that these middlemen are symmetric and define by a linear cost function (to simplify, we introduce transportation cost). We can present the cost function as follows:

$$C_m(q_{m,i}) = C_m q_{m,i}$$

The willingness to pay is characterized by the low quality index and denoted by ℓ. At this market low quality, consumers have two choices: (1) buying low quality; or (2) do not buying the products in the condition of the weight in the utility that is $\theta[0, K]$. In this case, K is the ranking of population who may participate to buy food; and consumers are uniformly distributed on [0, K], we also set natural assuming that $\ell K > C_m$. It implies that the willingness to pay must be large than the cost of the middlemen. From that point of view, the demands $D_\ell(p_\ell)$ for low-quality food are, respectively, given by:

$$D(p_\ell) = \begin{matrix} 0 if P_\ell > \ell K \\ \left[K - \frac{P_\ell}{\ell}\right] if P_\ell \leq K \end{matrix}$$

This $D(p_\ell)$ gives us an opportunity to verify the inverse demand correspondence $P : Q_\ell \in R_+^2$, which is given by:

$$P_\ell(Q_\ell) = \ell(K - Q_\ell) if Q_\ell \geq 0 \tag{18.3}$$

3 Results

3.1 Downstream Market Equilibrium

3.1.1 Definition

In many cases, the market power in the upstream may not attract middlemen. For example, when many farmers supply their foods at the same time with big quantity, the price in the upstream of the food system is very low; in contrast, when index low

quality in the downstream is high enough, middlemen interest on market power in the downstream. Let us now study the case of imperfect competition in the downstream in which middlemen have oligopoly market power. In this case, middlemen anticipates demand of consumers; based on this demand, the price is given to the market low quality by $P_\ell = \left(\sum_{\substack{i=1 \\ j \neq i}}^{m} q_j^* + q_i \right)$. At equilibrium, the definition is given as follows:

Definition 18.1 In the case of downstream market power, at market equilibrium, $\lambda_j^*, q_j^*, p_\ell^*, p_{fm}^*$ are defined as follows:

Farmers maximize their profit: $\max_\lambda P_{fm} f(\lambda_j) - \lambda_j$

Middlemen maximize their profit: $\forall_i, q_i{}^* \in$

$$\max q_i \left(P_\ell \left(\sum_{\substack{j=1 \\ j \neq i}}^{m} q_j^* + q_i \right) - P_{fm} - c_m \right).q_i$$

$$\sum_{i=1}^{m} q_j^* = \sum_{j=1}^{N} f(\lambda_j) q_i; \sum_{i=1}^{m} q_i^* = D(p^*)$$

Given by Definition 18.1, the condition for optimization of middlemen is given as:

$$\forall_i, (-\ell).q_i + \left(\ell(K - Q) - P_{fm} - c_m \right) = 0$$

By summing over i, we obtain:

$$\forall_i, \ -\frac{\ell}{m}.Q_\ell + \left(\ell(K - Q_\ell) - P_{fm} - c_m \right) = 0$$

We therefore obtain the result:

$$Q_\ell = \frac{m\left(\ell K - P_{fm} - c_m \right)}{\ell(m+1)} \tag{18.4}$$

Given by the definition of this case, we have considered that from the farmer optimal problem, at equilibrium, the supply of the farmer at (18.1) must be equal to

the aggregate quality in the downstream; in other words, we have $\sum_{i=1}^{m} q_j^* = S\left(P_{fm}\right)$, and we now use quantity to clear the market:

$$\frac{m\left(\ell K - P_{fm} - c\right)}{\ell(m+1)} = \frac{NP_{fm}}{2}$$

The price which farmer receives from middlemen therefore is given as:

$$P_{fm} = \frac{2(\ell K - c_m)}{(\ell N + 2) + \frac{\ell N}{m}} \tag{18.5}$$

To clear the market at the downstream, we replace P_{fm} at (18.5) to Q_ℓ at (18.4); the trade quantity is given by:

$$Q_\ell = \frac{\ell K - c_m}{\frac{2}{N} + \ell\left(\frac{1}{m} + 1\right)}$$

Since we have in hand the trade quantity at market equilibrium, we can now compute the price by using inverse demand function $P_\ell(Q_\ell) = \ell(K - Q_\ell)$ at (18.3). The price at demand market P_ℓ therefore is given as:

$$P_\ell = \frac{\ell K(2m + N\ell) + mN\ell c}{m(N\ell + 2) + N\ell}$$

We can now move to verify the profit of middlemen in this case, which is given as follows:

$$\begin{aligned} \pi_m^{Downstream} &= \left(P_\ell - P_{fm} - c\right) Q_\ell^{Downsrteam} \\ &= N^2 m\ell \left(\frac{(\ell K - c_m)^2}{2m + N\ell + Nm\ell}\right) > 0 \end{aligned} \tag{18.6}$$

Result 3.1: *Given by the computation, we obtain the result of the case of downstream market power:*

P_{fm}	P_ℓ	Q_ℓ	π_f^m	π_m
$P_{fm} = \frac{2(\ell K - c_m)}{(\ell N + 2) + \frac{\ell N}{m}}$	$P_\ell = \frac{\ell K(2m + N\ell) + mN\ell c}{m(N\ell + 2) + N\ell}$	$Q_\ell = \frac{\ell K - c_m}{\frac{2}{N} + \ell\left(\frac{1}{m} + 1\right)}$	$\left(\frac{Q_\ell(N)}{N}\right)^2$	>0

3.2 Comparative Analysis

The case of downstream market power in the conventional food distribution linked to typically the case of Vietnam. At the local town level, we can observe that: (i) There is the big number of famers who living around the town producing foods; and (ii) there is also many middlemen who buy this products from farmers. In this situation, the middlemen have no oligopsony market power. However, in the downstream, middlemen sell all products at their small shops (which we call mom-and-pop stores, frog market, and street markets); in this situation, they have oligopoly market power. Since middlemen have downstream market power, the basic property can be predicted that the price at final market in this case must be higher than in the case of perfect competition, but the trade quantity will be decreased. Therefore, the price given to the farmers will be lower. Let us now go back to the results of the model to study how the situation is implied in the model.

In order to comparative analysis, we firstly look for the benchmark case of market competition. By keeping the same method of computation, the result of perfect competition is given by:

Result 3.2: *Given by computation, we obtain all the solutions for the case of perfect competition as follows:*

Case	P_{fm}	P_{ℓ}	Q_{ℓ}	π_f^m	π_m
Perfect competition	$\frac{2(\ell K - c_m)}{\ell N + 2}$	$\frac{\ell(2K + Nc_m)}{\ell N + 2}$	$\frac{\ell K - c_m}{\ell + \frac{2}{N}}$	$\left(\frac{Q_{\ell}(N)}{N}\right)^2 > 0$	*Zero*

For more detail of Result 3.2, please refer to Thanh (2018)

We firstly look for the difference of the P_{ℓ} between perfect competition and downstream case, by replacing $P_{\ell}^{\text{Downsream}}$, $P_{\ell}^{Perfect}$, $P_{fm}^{\text{Downsream}}$, and $P_{fm}^{\text{Downsream}}$ at Result 3.1 and Result 3.2 to (18.6); we observe that:

$$P_{\ell}^{\text{Downsream}} - P_{\ell}^{\text{Perfect}} = \frac{N^2 \ell^2 (\ell K - c_m)}{(m(N\ell + 2) + N\ell)(N\ell + 2)} > 0 \tag{18.7}$$

Since $\ell K > c_m$, we can now obtain that:

$$P_{\ell}^{\text{Downsream}} > P_{\ell}^{\text{Perfect}}$$

And:

$$P_{fm}^{\text{Downstream}} = \frac{2(\ell K - c_m)}{\left(\ell N + 2 + \frac{\ell N}{m}\right)} < P_{fm}^{\text{Perfect}} = \frac{2(\ell K - c_m)}{\ell N + 2}$$

This result obviously appears as what we predicted in the context of Vietnam. It is shown that, when middlemen have downstream market power, the price given to

consumer is higher, while the price given to farmer is decreased compared to benchmark case.

If we have in mind that $\pi_f^m(N) = \left(\frac{Q_\ell(N)}{N}\right)^2$, to compare profit of the farmer in this case with the case of perfect competition, we just need to compare the trade quantity between two cases. Since we consider that $\ell + \frac{2}{N} < \frac{2}{N} + \ell\left(1 + \frac{1}{m}\right)$, we therefore have:

$$Q^{perfect} - Q^{Downstream} = \left(\frac{\ell K - c_m}{\ell + \frac{2}{N}}\right) - \left(\frac{\ell K - c_m}{\left(\frac{2}{N} + \ell\left(1 + \frac{1}{m}\right)\right)}\right) > 0$$

This result implies that $Q_\ell^{\text{perfect}} > Q_\ell^{\text{downstream}}$, and we can conclude that farmer's profit in imperfect competition on downstream is smaller than farmer's profit in the case of perfect competition:

$$\pi_{fm}^{m(\text{downstream})}(N) < \pi_{fm}^{m(\text{perfect})}(N) \tag{18.8}$$

This result implies that, in the case of downstream market power, the wealth of middlemen is positive. Concerning the comparison of the profit of the case of downstream with those in benchmark, we obtain the result at (18.6) and (18.8), which indicates that the profit of farmers in the case of downstream is smaller than in pure competition and profit of middlemen is positive compared to zero at benchmark case. They obtain this profit from their market power by capturing a part of surplus of consumers and gaining profit from farmers by lower price.

Proposition 18.1 *In the case of downstream when middlemen have oligopoly market power*

Even if it is competitive at final consumer market, the price given to consumers is higher (i.e., $P_\ell^{\text{Downstream}} > P_\ell^{\text{Perfect}}$).

Less quantity are traded (i.e., $Q_\ell^{\text{Downstream}} < Q_\ell^{\text{Perfect}}$), and as a consequence, the price paid to farmers is lower (i.e., $P_{fm}^{\text{Downstream}} < P_{fm}^{\text{Perfect}}$).

Profit of farmers is decreased since middlemen pay lower (i.e., $\pi_f^{\text{Downstream}}(\text{N}) < \pi_m^{\text{Perfect}}(\text{N})$).

Profit of middlemen is positive by capturing a part of surplus from consumers and paying lower to the farmers (i.e., $\pi_m^{\text{Downstream}} > 0$).

3.3 Optimal Land Policy for the Intervention of Downstream Market Power

3.3.1 Theoretical Model of Land Reform

We construct a model of land reform in order to create a productivity shock on the food supply market of the farmers. In our land reform model, we not only indicate the effect of this policy on farmers' and consumers' wealth but also show that there is the best choice of land reform instrument since middlemen have market power in the downstream of the traditional food distribution system. In this model, the author directly introduces the parameter of land reform in the food production of the farmer. In more precisely, the production function is given by:

$$q = f(\lambda) = \sqrt{\alpha\lambda}$$

In the model, λ is labor use to produce food with the optimal labor used of the famers is given by:

$$\lambda = \left(\frac{\sqrt{\alpha}p_{fm}}{2}\right)^2$$

$Q_m(\alpha)$ is the total food supplied for the middlemen and given by:

$$Q_m(\alpha) = N.\frac{\alpha p_{fm}}{2}$$

We therefore obtain the inverse supply function $p_{fm}(\alpha) = \frac{2Q_m}{\alpha N}$

In this model, we observe that nothing is changed in the demand at the downstream; what is only changed in the maximization problem of middlemen is α multiplied by N. Therefore, at market equilibrium, the result of the prices and quantities is given as:

Result 3.3: Solution of downstream market equilibrium with land reform is given by:

$p_{fm}(\alpha)$	$p_\ell(\alpha)$	$Q_\ell(\alpha)$
$\frac{2(\ell K - c_m)}{\left(\alpha\ell N\left(\frac{1}{m}+1\right)+2\right)}$	$\frac{\alpha\left(\ell^2 NK + mN\ell c_m\right)+2m\ell K}{\alpha\ell N(m+1)+2m}$	$\frac{\ell K - c_m}{\ell\left(\frac{1}{m}+1\right)+\frac{2}{\alpha N}}$

3.3.2 Analyzing the Effect of Land Reform

We study the effect of land reform on the prices and the quantities by computing the elasticity which reflects the reaction of the prices to the changes of α. More precisely, elasticity Ep_{fm} is verified by $Ep_{fm} = \frac{dp_{fm}(\alpha)}{d\alpha} \cdot \frac{\alpha}{p_{fm}(\alpha)}$ and $Ep_{\ell} = \frac{dp_{\ell}(\alpha)}{d(\alpha)} \cdot \frac{\alpha}{p_{\ell}(\alpha)}$.

Proposition 18.2 *The effect of land reform on prices and quantities in the case of downstream is as follows:*

Elasticity of p_{fm}	Elasticity of p_{ℓ}	Quantity
$-\left(\frac{\alpha\ell N\left(1+\frac{1}{m}\right)}{\alpha\ell N\left(1+\frac{1}{m}\right)+2}\right) < 0$	$-\frac{2\alpha m^2\ell N(\ell K-c_m)}{(\alpha\ell N(m+1)+2m)(\alpha N\ell(\ell K+mc_m)+2m\ell K)} < 0$	$\frac{dQ_{\ell}}{d(\alpha)} > 0$

Proof See Appendix

The result indicates that, since we have land reform, the consumers buy food at the cheaper price ($Ep_{\ell} < 0$) at final demand market, while farmers receive lower price paid by middlemen ($Ep_{fm} < 0$) on the farmer's food supply market. Based on this result, we can see that land reform has benefits to the consumer but has negative effect on farmers. Although land reform has some limitation, it can be seen that, since land to be used more flexible, farmers can lower production cost and sell more foods by improving productivity $\left(\frac{dQ^{\alpha}_{\ell}}{d\alpha} > 0\right)$. The results of this model linked are to the research of Nguyen (2012). He argues that in Vietnam, land reform policy has positive effects on crop productivity and also improves food production.

Proposition 18.3 *The reaction of the price in food supply market of the farmers is given by* $E^{Downstream}_{P_{fm}} > E^{Perfect}_{P_{fm}}$*, while the reaction of price in demand side of consumers is given by* $E^{Downstream}_{P_{\ell}} < E^{Perfect}_{\ell}$.

Proof See Appendix.

This result gives us opportunity to understand the distortion introduced by imperfect competition in the case of downstream market power. It can be seen that, because of perfect competition and productivity shock in the upstream, the cost of middlemen is decreased. They therefore can decrease the price more than the cost to attract consumers; in some sense, they reduce their market power. That is the reason why $E^{\text{Downstream}}_{P_{fm}} < E^{\text{Perfect}}_{P_{fm}}$. But they don't increase the quantity traded as perfect competition, or in other words, they want to buy less from farmers compared to perfect competition. That is the reason why the price given to farmers is more reactive compared to perfect competition $E^{\text{Downstream}}_{P_{fm}} > E^{\text{Perfect}}_{P_{fm}}$.

3.3.3 Optimal Land Reform Policy

In order to organize this discussion, we adopt the second best approach. The reader, however, notices that in the case of perfect competition, we characterize the first best. From that point of view, we have different cases to compute the surplus of consumers net of production cost. We also ask some specific costs linked to the implication of land reform; they are given by $C_L = \frac{1}{2}V(\alpha+1)^2$.

Definition 18.1 *The second best productivity shock α is given by:*

$$\max \alpha \in \int_0^{Q^*} \ell(K-q)dQ_\ell^* - c_m Q_\ell^* - \lambda^* - \frac{1}{2}V(\alpha-1)^2 \text{With} \quad \lambda^* = \frac{q^2}{\alpha} = \frac{Q_\ell^2}{\alpha N}$$

The general condition for the maximization problem of α is therefore given by:

$$\left(\ell\left(K - Q_\alpha^*\right) - c_m - \frac{2Q_\ell^*}{\alpha N}\right)\frac{dQ_\ell}{d\alpha} + \frac{Q_\ell^2}{\alpha^2 N} - V(\alpha-1) = 0 \tag{18.9}$$

Proposition 18.4 *Given by our computation, the first-order (FOC) and the second-order conditions (SOC) for optimization problem of α in the case of downstream are given as follows*:

$$\begin{aligned} \text{FOC} \quad & \frac{\left(Q_\ell^{\text{Downstream}}(\alpha)\right)^2}{\alpha^2 N}\left(\frac{2\alpha N\ell}{(\alpha N\ell(1+m)+2m)} + 1\right) - V(\alpha-1) = 0 \\ \text{SOC} \quad & -\frac{2\ell\left(Q_\ell^{\text{Downstream}}\right)^2}{\alpha^2}\left(\frac{\alpha(1+m)^2A+2m(A-1)}{(\alpha\ell N(1+m)+2m)^2}\right) - V < 0 \end{aligned}$$

Proof See appendix

Existence

It remains to verify that there exists a unique solution for α FOC in the downstream case of market competition. By the second-order condition (SOC), we have in hand that the function is decreasing. It remain to verify some boundary condition which ensure that solution between $[1, +\infty]$.

Proposition 18.5 *We show that there exists an optimal of $\alpha > 1$, which is the best choice of policy in the case of downstream market competition.*

Proof See Appendix.

4 Conclusions

We propose the industrial organization model for traditional food distribution system in developing countries. The result shows that, at market equilibrium, the middlemen's market power in the case of downstream affect both farmers and consumers. We show that, with market power, the price paid to farmers is lower, while the price sold at the final consumer market is getting higher compared to benchmark case. This is the reason why we can conclude that, in the conventional food distribution system, with their market power, middlemen capture some profit from farmers and also take a part of the wealth of consumers.

In this paper, we also propose model of land reform policy in downstream market by introducing productivity shock. At equilibrium, the author analyzes the impact of land reform policy and show that there exists the best choice of land reform policy for the case of downstream market power.

Appendix

Proof of Proposition 3.2

Elasticity of P_{fm}

Since $P_{fm}^{\text{Downstream}(\alpha)} = \frac{2(\ell K - c_m)}{\left(\alpha \ell N\left(\frac{1}{m}+1\right)+2\right)}$, we obtain:

$$\frac{dP_{fm}}{d(\alpha)} = -\frac{2(\ell K - C_m).\ell N\left(1+\frac{1}{m}\right)}{\left(\alpha \ell N\left(1+\frac{1}{m}\right)+2\right)^2} = -P_{fm}.\frac{\ell N\left(1+\frac{1}{m}\right)}{\left(\alpha \ell N\left(1+\frac{1}{m}\right)+2\right)^2}$$

$$\Rightarrow E_{P_{fm}}^{\text{Downstream}} = -P_{fm}.\left(\frac{\ell N\left(1+\frac{1}{m}\right)}{\left(\alpha \ell N\left(1+\frac{1}{m}\right)+2\right)^2}\right).\frac{\alpha}{P_{fm}} = -\left(\frac{\alpha \ell N\left(1+\frac{1}{m}\right)}{\alpha \ell N\left(1+\frac{1}{m}\right)+2}\right) < 0$$

Elasticity of P_{ℓ}

Since $P_{\ell}(\alpha) = \frac{\alpha\left(\ell^2 NK + mN\ell c_m\right)+2m\ell K}{\alpha \ell N(m+1)+2m}$

$$\frac{dP_{\ell}}{d(\alpha)} = \frac{N\ell(\ell K + mC_m)(\alpha \ell N(m+1)+2m) - \ell N(m+1)}{(\alpha \ell N(m+1)+2m)^2}$$

$$= -P_\ell \cdot \frac{\ell N(m+1)}{(\alpha \ell N(m+1)+2m)} + \frac{\ell N(\ell K + mC_m)}{(\alpha \ell N(m+1)+2m)}$$

$$\Rightarrow E_{P_{fm}}^{\text{Downstream}} = \frac{dP_\ell}{d(\alpha)} \cdot \frac{\alpha}{P_\ell(\alpha)} = \frac{2\alpha m^2 \ell N(\ell K - C_m)}{(\alpha \ell N(m+1)+2m)(\alpha N \ell(\ell K + mC_m)+2m\ell K)}$$

Proof of Proposition 3.3

$$E_{P_{fm}}^{\text{Downstream}} > E_{P_{fm}}^{\text{Perfect}}$$

$$E_{P_{fm}}^{\text{Downstream}} - E_{P_{fm}}^{\text{Perfect}} = -\left(\frac{\alpha \ell N\left(1+\frac{1}{m}\right)}{\alpha \ell N\left(1+\frac{1}{m}\right)+2}\right) - \frac{\alpha \ell N}{\alpha \ell N + 2}$$

$$= \frac{2\alpha \ell N}{(\alpha \ell N + 2)(2m + \alpha \ell N + \alpha \ell N m)} > 0 \Rightarrow E_{P_{fm}}^{\text{Downstream}} > E_{P_{fm}}^{\text{Perfect}}$$

$$E_{P_\ell}^{\text{Downstream}} < E_{P_\ell}^{\text{Perfect}}$$

$$E_{P_\ell}^{\text{Perfect}} - E_{P_\ell}^{\text{Downstream}} = \mu\left(\frac{2N^2\alpha^2\ell}{(2K + N\alpha C_m)(\alpha N \ell + 2)}\right) > 0$$

$$\text{with } \mu = \frac{(\ell K - C_m)(4Km + N\alpha(\ell K + mC_m + m\ell K))}{(2m + N\alpha\ell + Nm\alpha\ell)(2Km + NK\alpha\ell + Nm\alpha C_m)} > 0$$

$$\Rightarrow E_{P_\ell}^{\text{Perfect}} > E_{P_\ell}^{\text{Downstream}}$$

Proof of Proposition 3.4

FOC

The condition for maximization problem of middlemen is given as:

$$\forall_i, -\frac{\ell}{m}Q_\ell + \left(\ell(K - Q_\ell) - P_{fm} - C_m\right) = 0$$
$$\Leftrightarrow \forall_i, \ell(K - Q_\ell) - C_m = P_{fm} + \frac{\ell}{m}Q_\ell$$

And we also consider $P_{fm} = \frac{2Q_m}{\alpha N}$.

Let us substitute $\ell(K - Q_\ell) - C_m = P_{fm} + \frac{\ell}{m}Q_\ell$ and $P_{fm} = \frac{2Q_m}{\alpha N}$ to (18.9). We obtain the result:

$$\begin{aligned}&\left(\ell\left(K - Q_\alpha^*\right) - c_m - \frac{2Q_\ell^*}{\alpha N}\right)\frac{dQ_\ell}{d\alpha} + \frac{Q_\ell^2}{\alpha^2 N} - V(\alpha - 1) = 0\\ &\Leftrightarrow \left(\frac{\ell}{m}.Q_\ell\right)\frac{dQ_\ell}{d\alpha} + \frac{Q_\ell^2}{\alpha^2 N} - V(\alpha - 1) = 0\end{aligned} \tag{18.10}$$

Therefore, if we substitute $\frac{dQ_\ell}{d\alpha} = \frac{2mQ_\ell}{\alpha(\alpha\ell N(1+m)+2m)}$ to (18.10), we have:

$$FOC = \frac{Q_\ell^2}{\alpha^2 N}\left(\frac{2mQ_\ell}{\alpha(\alpha\ell N(1+m)+2m)} + 1\right) - V(\alpha - 1) = 0$$

SOC

FOC can be written as:

$$\frac{Q_\ell^2}{\alpha^2 N}\underbrace{\left(\frac{2mQ_\ell}{\alpha(\alpha\ell N(1+m)+2m)} + 1\right)}_{A} - V(\alpha - 1) = 0 \tag{18.11}$$

Let us set $A = \left(\frac{2mQ_\ell}{\alpha(\alpha\ell N(1+m)+2m)} + 1\right) > 1$; we now can compute the SOC in the case of downstream, which is equal to:

$$\left(\frac{Q_\ell^2}{\alpha^2 N}A - V(\alpha - 1)\right)' = \left(\frac{Q_\ell^2}{\alpha^2 N}\right)'A + A'\left(\frac{Q_\ell^2}{\alpha^2 N}\right) - V \tag{18.12}$$

Let us verify $\left(\frac{Q_\ell^2}{\alpha N}\right)'$; we obtain that:

$$\left(\frac{Q_\ell^2}{\alpha N}\right)' = \frac{2Q_\ell \frac{dQ}{d\alpha}\alpha^2 N - 2\alpha N Q_\ell^2}{\alpha^4 N^2} = \frac{2Q_\ell \frac{2mQ_\ell}{\alpha(\alpha\ell N(1+m)+2m)} - 2\alpha N Q_\ell^2}{\alpha^4 N^2}$$

$$= -\frac{2Q_\ell^2 \alpha\ell N(1+m)}{\alpha^3 N(\alpha\ell N(1+m)+2m)}$$

Besides, $A' = \left(\frac{2mQ_\ell}{\alpha(\alpha\ell N(1+m)+2m)} + 1\right)' = \frac{4\ell Nm}{(\alpha\ell N(1+m)+2m)^2}$

Let us substitute $\left(\frac{Q_\ell^2}{\alpha N}\right)' = -\frac{2Q_\ell \alpha\ell N(1+m)}{\alpha^3 N(\alpha\ell N(1+m)+2m)}$ and $A' = \frac{4\ell Nm}{(\alpha\ell N(1+m)+2m)^2}$ to (18.12); we obtain the result:

$$SOC = -\frac{2Q_\ell \alpha\ell N(1+m)}{\alpha^3 N(\alpha\ell N(1+m)+2m)} A + \frac{4\ell Nm}{(\alpha\ell N(1+m)+2m)^2}\left(\frac{Q_\ell^2}{\alpha N}\right) - V$$

$$\Leftrightarrow SOC = -\frac{2\ell Q_\ell^2}{\alpha^2}\left(\frac{\alpha(1+m)^2 A + 2m^2 A + 2m(A-1)}{(\alpha\ell N(1+m)+2m)^2}\right) - V < 0 \qquad (18.13)$$

Given by the result at (18.12) and (18.13), we can conclude that there exists an optimal of $\alpha > 1$ in case of the downstream imperfect competition.

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Chapter 19
Compensation Policies and Employee Perceptions of Pay Equity in a Transitional Economy: The Case of Vietnamese State-Owned Enterprises

Anh Ngo, Cuong Do, and Anh Mai

Abstract This paper examines relationships between compensation reform policy and perception of pay equity in Vietnamese state-owned enterprises (SOEs) during their reform process. The research uses a quantitative approach to examine a key research question: *How do compensation components relate to employee perceptions of pay equity in Vietnamese SOEs?* The research develops a theoretical framework based on two key theories: theory of compensation by Milkovich et al. (Compensation, McGraw-Hill, 2011) and theory of equity by Adams (Abnormal Soc Psychol 67(5):422–436, 1963) and Adams (Adv Exp Soc Psychol 2:267–299, 1965). The research's findings theoretically contribute to understanding relationships between compensation policies and perceptions of pay equity generally and in the context of Vietnam's SOE reform particularly. It also proposes practical recommendations to improve compensation policies and practices in Vietnam's SOEs for enhancing the perception of pay equity in the new context.

Keywords Vietnam · Economic reform · State-owned enterprise · Compensation policy · Compensation practices · Perception of pay equity

1 Introduction

Economic reform in Vietnam (*Doi moi*), beginning in the late 1980s, was aimed to adapt the Vietnamese economy to market-oriented practices and to increase their efficiency. A central point of this reform has been the transformation of state-owned enterprises (SOEs) (Ngo 2017). This change of the national and business governance

A. Ngo (✉) · C. Do
Ho Chi Minh National Academy of Politics, Hanoi, Vietnam

A. Mai
VNU International School, Hanoi, Vietnam

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systems has led to significant changes in compensation policy and practices in those state firms. Besides the changes of compensation, the perceptions of pay equity among SOEs' employees have also shifted from a view of respecting harmony and collectivism toward individualism and the notion of performance-based pay (Ngo 2017). Owing to a lack of research on these issues, this paper has focused on investigating compensation fairness in the transformation process of SOEs in the transitional society of Vietnam. It tackles the central research question: *How do compensation components relate to employee perceptions of pay equity in Vietnamese SOEs?*

To do so, the paper employs a quantitative approach to investigate two types of SOEs in Vietnam's biggest economic areas, namely, Ho Chi Minh City and Hanoi, in 2016. The primary data was a combination of 650 survey responses. This paper firstly presents a conceptual framework for conducting a quantitative study to examine the research question. It then explained the research method following the research findings and discussion.

2 Literature Review

There are different definitions of compensation, due to different points of view. This study uses Milkovich et al. (2011)'s definition to investigate relationships between compensation policies and employee's perceptions of pay equity. According to Milkovich et al. (2011, p. 10), "Compensation refers to all forms of financial returns and tangible services and benefits employees receive as part of an employment relationship."

In the HRM field, equity theory proposed by Adams (1963, 1965) is considered as a key theory to examine the fairness of a compensation system. This is a theoretical foundation to investigate perceptions of pay equity. The employees' perceptions of pay equity can be examined through their feelings of satisfaction or dissatisfaction with their compensation, in comparison with their inputs or with those of others inside or outside their organizations. According to Adams (1963, 1965), an employee brings many inputs to his/her job, including experience, education, intelligence, physical strength, commitment, status, and social connections, and then expects to receive a just return or outputs. The outputs might be in the form of status, benefits, or basic pleasures and reimbursed monetarily. He also emphasizes that the exchange between employees and employers is subjective so that the employees continuously check their inputs and outputs for jobs to perceive whether or not the ratio of the input and output is equitable. If the ratio between the inputs and the outputs is equal, they perceive there to be pay equity; otherwise, feelings of pay inequity exist. They also compare their ratio to others to perceive pay equity or not.

The research on impacts of compensation on the perceptions of pay equity is fragmented. Studying the impacts of compensation in cash is the most popular. They state the linkages between the level of payment to pay satisfaction, absenteeism rates, burnout, emotional exhaustion, and turnover rates and acts of stealing and theft

(Telly et al. 1971; McFarlin and Sweeney 1992; Heneman III 1985; Summers and DeNisi 1990; Greenberg 1990; Carson et al. 2010). Later, the decision-making process of pay has been found to have more impact on the perception of fairness than has the amount of pay (Zheng et al. 2014; Della et al. 2015). Besides pay as cash compensation, Romanoff et al. (1986) state several non-monetary benefits are influencing the perception of pay equity. Studies show that workers often rank job security, working conditions, advancement opportunities, management appreciation, relations with co-workers, and flexibility of hours or job assignment ahead of pay. Studies done by Davis and Ward (1995) and Martin and Bennett (1996) indicate that the perception of fairness in benefits provided by the firm was related to the fairness of the total amount of compensation. Jawahar and Stone (2011) emphasize that the employees' satisfaction with value and administration of benefits will tend to result in satisfaction with the overall compensation system.

The empirical studies also indicate other factors including personal background, firm's management, government policies, and culture apart from compensation components as contributors for the perception of pay equity (Berkowitz et al. 1987; Buick et al. 2015; Heneman et al. 1997; Isaac 2001; Sturman 2006; Tekleab et al. 2005; Wu et al. 2013; Blackman et al. 2019). Some studies state that government policies on minimum wage can influence the employees' compensation, which thus might impact their perception of pay (Rice et al. 1990; Milkovich et al. 2011). Employees' cultural background has been found to influence their view in judging compensation fairness (Hundley and Kim 1997).

Literature review on the relationship between compensation and employees' perceptions of pay equity presents significant interests of many scholars. However, there is still a lack of comprehensive studies on this topic in the context of transitional economies. To fill the gap in the literature, this study thus explores the impacts of compensation components on the perception of pay equity in Vietnam.

2.1 Hypothesis Development

2.1.1 Effect of Minimum Wage

Minimum wage contributes to social fairness by forcing employers to pay workers at least equal to a socially acceptable minimum (Bradshaw et al. 2008; Milkovich et al. 2011). This protects workers from exploitation, especially the ones in the low-income group (Lee 1999; DiNardo et al. 1996). Minimum wage increases pay equity at the lower end of the wage distribution (David et al. 2016). The relevant studies on the relationship between minimum wage and pay equity suggest the following hypothesis:

Hypothesis 1: Minimum wage positively influences the perception of pay equity in Vietnamese SOEs.

Effect of Salary

Regarding pay equity and pay satisfaction of salary, Rice et al. (1990) showed that the actual amount of salary that an individual receives well explains about 25% of the variance in pay satisfaction. Martocchio (2006) and Milkovich and Newman (2005) also found when employees are satisfied with the amount of their salary, they tend to be happy with the total payment received. Similarly, regarding the salary procedure, several authors have argued the positive relations between salary procedure and pay satisfaction. Employees who are happy with the payment procedure will feel happy with their total payment (Miceli and Lane 1990; Shrivastava 2018). The pay satisfaction literature concluded that the relationship between perception of pay equity and pay satisfaction is always positive (Dyer and Theriault 1976; Heneman III 1985). Based on these studies, the relationship between salary and perception of pay equity is hypothesized as follows:

Hypothesis 2: Salary positively influences the perception of pay equity in Vietnamese SOEs.

Effects of Benefits

Hypothesis 3 was developed from a series of studies on the positive influence of benefit on pay satisfaction. The effect of benefit on pay satisfaction is used as a dimension measuring pay satisfaction (Heneman III 1985; Miceli and Lane 1990). The flexible benefit plans enhanced employees' pay satisfaction (Barber et al. 1992). Employees who rated their current level of benefit coverage as higher tended to be more satisfied with their pay package (Williams 1995). Employee perceptions of benefit justice positively impact their pay satisfaction (Davis and Ward 1995). This is a logical hypothesis of a positive relationship between benefit and perception of pay equity in Vietnamese SOEs, as follows:

Hypothesis 3: Benefit positively influences the perception of pay equity in Vietnamese SOEs.

Effects of Relational Return

Armstrong and Murlis (2007) argued that relational returns such as learning opportunities and promotion opportunities all act as powerful motivators and increase the employee perception of pay equity and satisfaction with the pay system. Practically, relational returns have positive impacts on the perception of pay equity among employees (Scott et al. 2011). Based on these findings of previous studies, this research hypothesizes the relationship between relational returns and perception of pay equity in Vietnamese SOEs as follows:

Hypothesis 4: Relational return positively influences the perception of pay equity in Vietnamese SOEs.

Ranking Effects of Compensation Components

Milkovich et al. (2011) propose that individuals perceive salary to be the main source of their financial security. In other words, monetary compensation or salary plays a vital role in ensuring employees' well-being. Salary is also a key compensation component reflecting the value of skills, experiences, or other inputs that

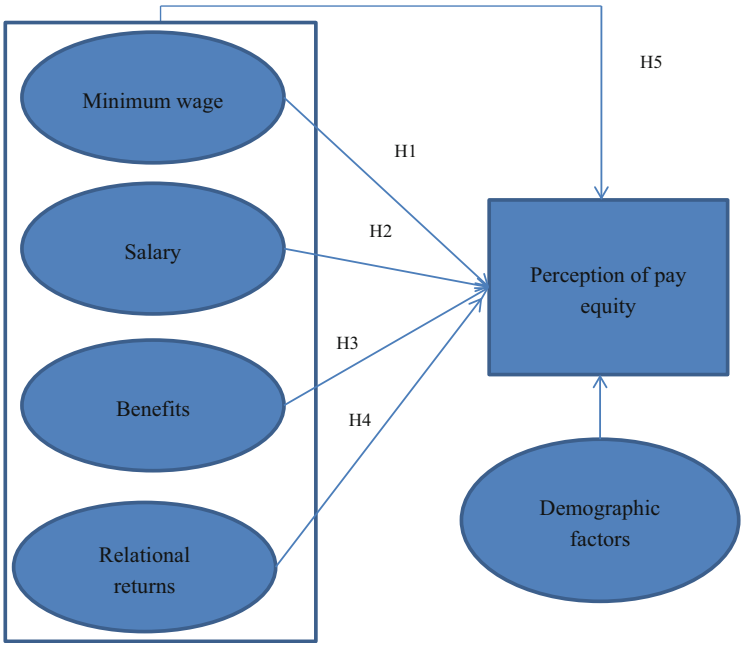

Fig. 19.1 A conceptual model of relationships between compensation components and the perception of pay equity (Source: Adapted from Milkovich et al. 2011; GSO 2017; Adams 1965)

employees bring to completing their jobs (Adams 1965). Therefore, it is expected that salary will have the strongest impact on the perception of pay equity among compensation components, as expressed in the following hypothesis:

Hypothesis 5: Among compensation components, salary has the strongest impact on the perception of pay equity in Vietnamese SOEs.

By developing the above research hypothesis, this research can propose relationships between compensation components and perceptions of pay equity in a conceptual model in Fig. 19.1.

Unit of Analysis and Demographic Factors

This research focuses on the perceptions of employees about their compensation and pay equity; thus, the unit of analysis is at the individual level. The impacts of internal and external contexts of the firm that might directly or indirectly influence employee perceptions are also examined to provide a comprehensive explanation of the relationships between compensation and individual perceptions of pay equity in Vietnamese SOEs. The focal point of this research is not on the impacts of employees' demographics on perceptions of pay equity; however, due to the potential impacts of these demographics on the regression results, these factors will be controlled for when examining the relationships between compensation and perceptions of pay equity in Vietnamese SOEs.

3 Methodology

The questionnaire is designed to measure variables in the research, including perceptions of pay equity, and the 4 main compensation components, namely, minimum wage, salary, benefits, and relational returns, and the 11 sub-components of the 4 main components. Each component of both groups was measured by three items. To measure the compensation components, the researcher referenced the Pay Satisfaction Questionnaire (PSQ) suggested by Heneman and Schwab (1985), Survey of Compensation Policies and Practices by WorldatWork (2003), and Employee Satisfaction Survey Sample by ECO Canada (2015). These questionnaires were referenced as a starting point for a systematic approach to measuring multiple dimensions of compensation components. The key points in the PSQ survey are to measure levels, actual amount, and procedure of compensation components. The surveys suggested by WorldatWork (2003) and ECO Canada (2015) guided items measuring the relational returns in the present survey. It also has questions about the general information of the respondent. This comprises questions about gender, age, educational level, position, working length, income level, SOE type, and industry.

The questionnaire includes 48 multiple-choice items. Each multiple-choice item was constructed with a five-point Likert scale, comprising very satisfied, satisfied, neutral, dissatisfied, and very dissatisfied. The questionnaire was translated into Vietnamese via a forward and backward translation process, due to all the respondents being Vietnamese. The questionnaire was tested in a pilot survey and revised in response to the feedback from the pilot test.

The target sample of the survey was employees in SOEs which were chosen randomly from the list of 498 SOEs on the government website of enterprise information. In total, 800 questionnaires were sent to the participants, and the researcher received 655 responses. After data were cleaned, there were 650 usable cases.

The study got ethical approval of the RMIT Human Research Ethics Committee (No. 18661) to conduct the survey. The participants in the study's survey were strictly voluntary, and the questionnaires were unidentified.

4 Results

4.1 Measure Reliability and Validity

The study used an internal consistency test by applying Cronbach's alpha coefficient to ensure the reliability of the measurement, exploratory factor analysis (EFA) to investigate the construct validity of the measure, and the Harman single-factor test to check common method variance (CMV) after the main data collection had finished. Cronbach's alpha of the measurements ranges from 0.741 to 0.911. According to Hair et al. (2010) and Kline (2015), these are all above the acceptable lower limit and

Table 19.1 Independent variables—reliability and EFA results

Factor	Indicator	α	Factor loading
Minimum wage	How minimum wage is determined	0.813	0.878
	The current general minimum wage		0.915
	The current regional minimum wage		0.783
Salary	How your salary is determined	0.791	0.859
	The level of your salary		0.881
	The amount of salary you received		0.782
Benefit	How your welfare is determined	0.837	0.899
	The general benefits of the welfare package		0.814
	Total welfare you have received		0.890
Relational return	The fairness of policy on career advancement in this company	0.855	0.897
	The general career development in this company		0.942
	Your chances in career development in this company		0.799

Table 19.2 Dependent variable—reliability and EFA results

Factor	Indicator	α	Factor loading
Perception of pay equity	The differences among levels in your company's pay structure	0.791	0.833
	The differences in pay of comparable jobs in the company		0.869
	The differences in pay between yours and comparable jobs in SOE system		0.816

Table 19.3 Total variance explained (for common latent factor)

	Initial eigenvalues			Extraction sums of squared loadings		
Component	Total	Variance (%)	Cumulative (%)	Total	Variance (%)	Cumulative (%)
1	15.741	32.794	32.794	15.741	32.794	32.794

Extraction method: principal component analysis

in the very good and excellent ranges of internal consistency. These results confirm that the measurements were accurate and consistent. For EFA outcomes, a cutoff point for factor loading at 0.50 was employed, to guarantee that each item for each factor was significant. The items measuring each theoretical variable are loaded onto one component; thus, the measurements of these theoretical variables have construct validity (see Tables 19.1 and 19.2).

For Harman's one-factor test to figure out CMV, all items were entered into EFA using unrotated principal component factor analysis. According to Podsakoff et al. (2003), if the new common latent factor explains more than 50% of the variance, then CMV may be present. The findings summarized in Table 19.3 show that the new common latent factor only explains 32.794% (<50%) of the variance in the

measures. Therefore, the results of Harman's one-factor test indicate that CMV was not a concern in this data set.

4.2 Hypothesis Testing

The four simple ordinary least squares (OLS) regression models are used to test relationships between each independent variable, minimum wage (Model 1 – M1, Hypothesis H1), salary (Model 2—M2, Hypothesis H2), benefit (Model 3—M3, Hypothesis H3), and relational return (Model 4—M4, Hypothesis H4), and the perception of pay equity, separately. A multiple OLS regression model (Model 5—M5, Hypothesis H5) is used to test the effects of all four independent variables together and the perception of pay equity. The findings responding to the hypotheses are presented in Table 19.4.

H1: Model 1 regression result showed that this model is statistically significant as the sig. value of this model is equal to 0.000 that is equivalent to the p-value less than 0.0005. After controlling for demographic factors, the model explains 30.2% of the variance of perceptions of pay equity, as R squared is 0.302 that is much higher than those of model with only control variables as R squared change is 0.234. The sig. value of minimum wage is 0.000, indicating that this variable is making a statistically significant contribution to predicting perceptions of pay equity. The beta coefficient of minimum wage has a positive sign, implying that minimum wage positively impacts perceptions of pay equity. Therefore, Hypothesis 1 is supported by this regression.

H2: The outcome of a simple regression for Model 2 supports Hypothesis 2. After controlling for demographic factors, salary explains 39.8% of the variance of

Table 19.4 Regression results with the perception of pay equity as a dependent variable

Independent variables	M1 H1: accepted	M2 H2: accepted	M3 H3: accepted	M4 H4: accepted	M5 H5: accepted
Gender	0.088^{***}	-0.035	0.095^{***}	-0.063^{***}	0.045^{**}
Age groups	-0.082^{**}	-0.053	-0.068	0.102^{**}	-0.043
Schooling	-0.003	-0.016	-0.014	-0.014	-0.022
Current position	0.170^{***}	0.080^{**}	0.153^{***}	0.126^{***}	0.108^{***}
Firm types	-0.120^{***}	-0.087^{**}	-0.109^{***}	-0.118^{***}	-0.075^{**}
Location	0.087^{**}	0.053	0.105^{**}	0.061^{**}	0.042
Minimum wage	0.488^{***}	0.594^{***}	0.395^{***}	0.436^{***}	0.200^{***}
Salary					0.367^{***}
Benefit					0.092^{**}
Relational return					0.109^{***}
R^2	0.302	0.398	0.219	0.249	0.449
R^2 change	0.234	0.33	0.151	0.181	0.381
Adjusted R^2	0.294	0.391	0.211	0.241	0.440

*, **, and ***: statistical significance at 10%, 5%, and 1% respectively, $N = 650$

perceptions of pay equity in Vietnamese SOEs, as the value of R squared is 0.398, which is higher than that for minimum wage. The sig. value is 0.000, and the beta coefficient of salary is 0.594, which is a positive number indicating that salary statistically positively affects perceptions of pay equity.

H3: Hypothesis 3 is supported by the simple regression for Model 3 between benefit and perception of pay equity as the sig. value of this model is equal to 0.000 and the beta coefficient of benefit has a positive sign. Notably, the R squared value is only 0.211 which is less than those of salary and benefit in the two above simple regressions. This means that the explanations of benefit for the variance of perception of pay equity are less than those of salary and minimum wage.

H4: Model 4's sig. value is 0.000, and the beta coefficient of relational return has a positive sign which means that relational returns positively impacts on perceptions of pay equity. This result supports Hypothesis 4. R squared value is 0.249. This percentage is quite similar to the contribution of benefit to explaining the perceptions of pay equity in Hypothesis 3.

H5: Before testing the hypothesis, data were checked for multicollinearity among independent variables in Model 5. Tolerance values of all independent variables are from 0.386 to 0.862, which are above 0.1, and the variance inflation factor (VIF) values of all independent variables are from 1.160 to 2.587, which are less than 10. Therefore, according to Pallant (2010), these regressions do not violate the assumptions of multicollinearity.

Regression results for relationships between the four main compensation components support Hypothesis 5, which is that there are positive relationships between minimum wage, salary, benefit, and relational return and perceptions of pay equity. Salary is the strongest and minimum wage the second strongest component contributing to the variance in perceptions of pay equity. After controlling for demographic variables, the value of R squared is 0.449 that is the highest value compared to the four previous simple regressions. This means that the combination of the four compensation components provides the best explanation for the variance in perceptions of pay equity.

5 Discussion and Conclusions

The quantitative findings indicated that all four compensation components, minimum wage, salary, benefit, and relational return, positively affect the perception of pay equity. Of these components, salary has the strongest effects on the employee perceptions of pay equity. This finding is different from that of the emerging role of non-monetary benefits in perceptions of compensation (Scott et al. 2011; Morrell 2011).

This difference might be explained by the influences of the social-economic environment in Vietnam, which has led the employees to be mainly concerned about their salary received. According to GSO (2017), the average monthly salary in SOEs in 2015 was 6.15 million VND, which was found to be insufficient to

support employees and their families (CIEM 2012). The economic difficulties and low-income situation have thus contributed to creating a mindset of favoring monetary rewards over other non-monetary benefits (Chatterjee and Pearson 2007). In such a difficult financial status, these employees tend to have a short view of the compensation and are more easily impressed by their enterprises' financial support for their daily lives than by any longer-term benefit.

Historically, the meaning of compensation, as salary or monetary benefit, has been the standard notion for most employees, as was the nature of the compensation system under the planned economy (Dao 2000). Until *Doi moi* started in 1986, there was not any formal compensation system that recognized non-monetary benefits such as social insurance or medical insurance. The only benefit that SOE employees received was the coupons that subsidized for basic consumer goods for SOE employees and government officers (Dang 2005). Coupons and salary were acknowledged and appreciated as total compensation for the employees (Collins 2009). These historical views of compensation have also contributed to the favor of salary among the compensation components.

In addition to the view toward the role of money, the low quality and insufficiency of insurance services have directly contributed to the employees' view on the lesser importance of non-monetary benefits provided in their compensation schemes. A survey by a popular online newspaper in Vietnam, *Youth* (*Tuoi tre*), in 2015 pointed out that 60% of retired persons stated that their pension was not able to support their lives and they still worked part-time to support their retirement lives. Furthermore, 64% of participants worried about the decreasing value of money that might decrease their pension in the future (Tuoi Tre 2015).

This study has significant contributions to the literature on relationships between compensation and perceptions of pay equity in a transitional economy. It has brought all compensation components into a model to investigate their effects on the perception of pay equity (see Fig. 19.1). This model is a compromise of both compensation theory and equity theory, to examine the practical issue of pay equity in Vietnamese SOEs, which has contributed to filling a gap in recent studies on compensation issues.

The main focus of this research was to investigate features of a compensation system enhancing employees' equity perceptions in Vietnamese SOEs, based on the dual theoretical foundation of compensation theory and equity theory. It is acknowledged here that, to design a suitable compensation model aiming at equity, SOEs have to consider influences of contextual factors beyond compensation components, because these all contribute to impacting their employees' perceptions. This study argues that paying more attention to the fairness of salary and its procedures will positively influence employee perceptions of compensation and then improve their performance. SOEs also should learn and adopt modern management methods, especially in compensation, to improve fairness in their decision-making processes, as employee perceptions of equity have changed toward the modern ideology of distribution and management.

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Chapter 20
Sustainable Agriculture for Hanoi City: An Application of Thünen's Agricultural Rings Based on the Gravity Model

Nguyen An Thinh

Abstract Since Hanoi city expanded its administrative boundary in 2008, the peri-urban agriculture significantly changed when it comes to production, product development, and consumption. This explicitly challenged sustainable agriculture in this area. This paper deals with Thünen's agricultural ring model, which expresses the standardized potential values of objects and phenomena and supports opportunities in a multi-central network. It allows analyzing cost-demand of the agricultural production. Using this model, maize products were shown to be only consumed at the factories, whereas rice and vegetables were two different types of agricultural products. During 2000–2015, they did not show changes in the consumption pattern of the city and the area of origin. In contrast, changing trends were found for livestock products such as beef. Consumption between the regions of origin and the city changed between 2000 and 2015. Pig products were consumed in a different way in the production areas compared to the city. Conversion was likely affected by the gravitational forces of the consumption market in downtown Hanoi city. Study results are a basis to propose a future sustainable development for agricultural planning in Hanoi.

Keywords Thünen's agricultural rings · Gravity model · Consumption type · Hanoi city · Vietnam

1 Introduction

Vietnam has a long tradition as an agricultural country and economy. However, despite the great potential, the yields and the effectiveness of agricultural production are still limited. This raises the issue of maximizing the yields and income from agriculture and of using the land in an effective way. The latter also applies to land

N. A. Thinh (✉)
VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam

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use in cities as Hanoi where the economic transformation and land use changes are robust and fast. In August 2008, the Ha Tay province and parts of the Vinh Phuc and the Hoa Binh province were merged to Hanoi, which increased its surface three times. The greater part of merged lands is used for agriculture; consequently, Hanoi's agricultural production and consumption changed. While before most of Hanoi's meat and vegetables were produced in the neighboring villages, the products are now produced within the metropolis. This context necessitates re-defining the market of agricultural production and its trends in Hanoi. This contributes to a scientific base to plan or sustainable agriculture development in Hanoi.

This paper deals with an application of Thünen's agricultural ring and gravity model, which expresses the standardized potential values of objects and phenomena and supports opportunities in a multi-central network (Jones 1984; Tsekeris and Stathopoulos 2006). The combination of these models allows analyzing cost-demand of the agricultural production (Peet 1970). Also the applications of these models were experienced in EU (Dascal et al. 2002; Melitz 2007) and Japan (Negishi 1990; Miyasaka 1995).

2 Methodology

2.1 Thünen Structure of Agriculture

In the eighteenth century, Johann Heinrich von Thünen (1783–1850) launched a model of agriculture patterns that became popular and was applied in many countries worldwide. The model is based on two hypotheses: "just one market in a region where the land has similar physical location conditions" and "only one major transport." Accordingly, the benefit formula was measured as:

$$P = Y \times (p - c) - Y \times D \times F \tag{20.1}$$

where P is profit (\$/km^2), Y is yield (tons/km^2), p is market price during a season (\$/tons), c is the production prices (\$/tons), D is the distance from market (km), and F is the transport cost (\$/tons/km).

Based on this formula (1), Thünen established a model with concentric rings around a city in which an agricultural product is produced. This *specialized agricultural ring* model allowed concluding that farming activities were only profitable if they happened at a suitable distance from the city. Production areas too far from the city center resulted in high transport fee and offer less competitive prices than products grown near the city center, even when fees are higher. Therefore, according to Thünen, agricultural production shows on adaptive distance, which at the limit moves to maximizing the benefits.

The main limitation of the Thünen model is that it is limited to studying the spatial relationship of two locations at same time. In reality, many centers co-exist, and their

relationships affect the appearance of the agricultural rings. The gravity model consequently upgrated the Thünen model using the formula (20.1):

$$V = \sum_{i=1}^{n} \frac{Pi}{Di} \tag{20.2}$$

where P_i is the yield of a production in a region ($i = 1, 2, 3...n$) and D_i is the distance from the manufacture area O to another manufacture area (km).

2.2 Gravity Model

The gravity model is based on the Newtonian view on the driving forces of a center in the multi-center network. Potential driving force is a concept regularly applied in social sciences. Potential gravity is used in a content of universal gravity; it refers to the potential energy of an object. Potential gravity depends on the weight, distance, and intensity of gravity forces. Yield from agriculture can also make potential driving forces like gravity defined by Newton. The higher the yield of the farms, the more this likely drives worker, transport services, agriculture services, and the processing industry. In this study that influenced forces were directly proportional to the agricultural yield and inversely proportional to distance to the market. Gravity values V in point O are calculated by the formula (20.3):

$$V_0 = G \times \sum_{i=1}^{n} \frac{P_i}{D_i^a} \tag{20.3}$$

where V_0 is potential values in point O (tons/km), P_i is yield of a production in a defined region ($i = 1, 2, 3...n$), D_i is the distance from the production area O to another manufacture area (km), G is a constant, n is number of production, and a is a weighting factor.

The weighting factor expresses influenced levels of distance. When "a" equals zero, the distance does not affect the production and the consumption of agricultural products. When "a" equals one, each production region had a similar weighting factor. When "a" equals {1, 2}, the distance affects other rates. And when "a" $\geq$ 2, the distance is the most important impact. In a case study of Tokyo city (Japan), Miyasaka (1995) classified agriculture with bellowing values $a = 1$ and $G = 1$ with formula (20.4):

$$V = \sum_{i=1}^{n} \frac{Pi}{Di} \tag{20.4}$$

The distance (D) is the mean distance from center to outside the town or half the distance from center to the nearest province. This formula is selected for this research.

2.3 Standardized Potential of Agricultural Products

The concept of standardized potential values of products clarifies the above analysis. This value combines all forces that agricultural products attract in between these production areas and the market, or it is the total of the forces affecting profits in a defined sphere. The gravitational potential values of the farming products, which was calculated by formula (20.4) to prove a series of distribution maps attractive potential value of them. Each point of the iso-product potential line equals the total of the gravitational forces in a defined sphere around it. This study hypothesizes that the profit of agricultural products is as high at thieving their point of production near to the center. Four types of consumption are assumed for the distribution type of the iso-product line. They differ in their gravitational potential value. This is related to the highest value of the potential set in a city, or at the point of production, or both, and further depends on whether each of the areas of consumption. These hypotheses allowed that there was a city (A) and production areas (B) in a certain sphere and would list and explain each type of distribution lines offers attractive potential value products.

2.4 Data Collection

Data used in this study includes (1) spatial data, maps of Hanoi before and after 2008 and the land use map of Hanoi in 2015 at a scale of 1:10,000, and (2) non-spatial data, statistic data on farming areas and agricultural yields in districts of Hanoi. From Eq. (20.4), the collected data contain (1) the agricultural product data including rice, maize, vegetables, beef, pork, and poultry in Hanoi in 2000 and 2015 (GSO Hanoi 2001, 2016) and (2) the distances measured using MapInfo software. Equation (20.4) allows calculating the iso-potential value of products. If a district is referenced by one point, Hanoi points and each point show potential product value. This allows calculating iso-potential value all over Hanoi.

Vertical Mapper 3.5 software is used to establish a value line showing the iso-potential values of the products. Natural neighbor interpolation is used to perform interpolation along the line. The technique allows to interpolate the sparse points and limits the effects of the maximum and minimum values; MapInfo Professional 15.0 (MapInfo Professional, version 15.0, Pitney Bowes MapInfo, USA) was used to establish maps of the potential values of the gravitational changes in expansion time of Hanoi after 2008.

3 Results

Maps of the agricultural product distribution show the gravitational potential value contours. They are used to interpolate 20 points districts and urban districts of Hanoi with the gravitational potential value of agricultural products. The maps are calculated assuming that the profitability of agricultural products is high in the place of origin or on the market. This affects the space definition: potential values increase closer to the center and decrease further from the central point. The iso-product potential line is sparse in some areas and thick in others. The peaks allow classifying the agricultural products in four types each with their specific characteristics.

The result shows that the potential value of beef products significantly rapidly increases from 8000 (ton/km) in 2000 to 12,000 (ton/km) in 2015. Another change in 2000 was the maximum potential value in the Dan Phuong and Hoai Duc districts, and it decreased around the two areas. Beef products in 2000 were consumed in downtown and production areas. In 2015, the maximum potential value in the area declined and fit in central districts. It changed the consumption pattern in the city. The lower price of beef this product to a growing inability to sell well in suburban areas where the economic conditions are higher than across districts, consequently, the consumer is moving stronger into the city. Agricultural sources thus had a trend of the moving from suburbs into the city for consumption, and the number of beef shops in the city has increased in recent years (see Fig. 20.1). The changes of other types of agricultural products are also shown in Fig. 20.1. These changes allow classifying the iso-product potential in Hanoi in 2000 and 2015 as shown in Table 20.1. Vegetables are less subject to variation than livestock. The changing livestock pattern follows the trend of consumable suction, and the potential values of most agricultural products increased.

Maize is one of the six agricultural products that is only consumed at the origin because it is the main food for livestock. Rice and vegetables are two agricultural products, of which the consumption did not have any change during the study period. They are consumed both in the city and at their place of origin in 2000 as well as in 2015. The major changes are detected during 15 years. The trend of change was significant for beef. Both production and consumption in the city increased (in 2015). The production and consumption of pork are different. Likely, the conversion was affected by the gravitational forces of the consumption market in central Hanoi. Crops were strongly affected by the center of Hanoi and other suburbs.

4 Conclusions and Discussion

The transition of the agricultural production and the change in the processing industry in Hanoi are fundamental. While field products tend to be stable, the livestock changed in a significant way. The crops and livestock are grown in the

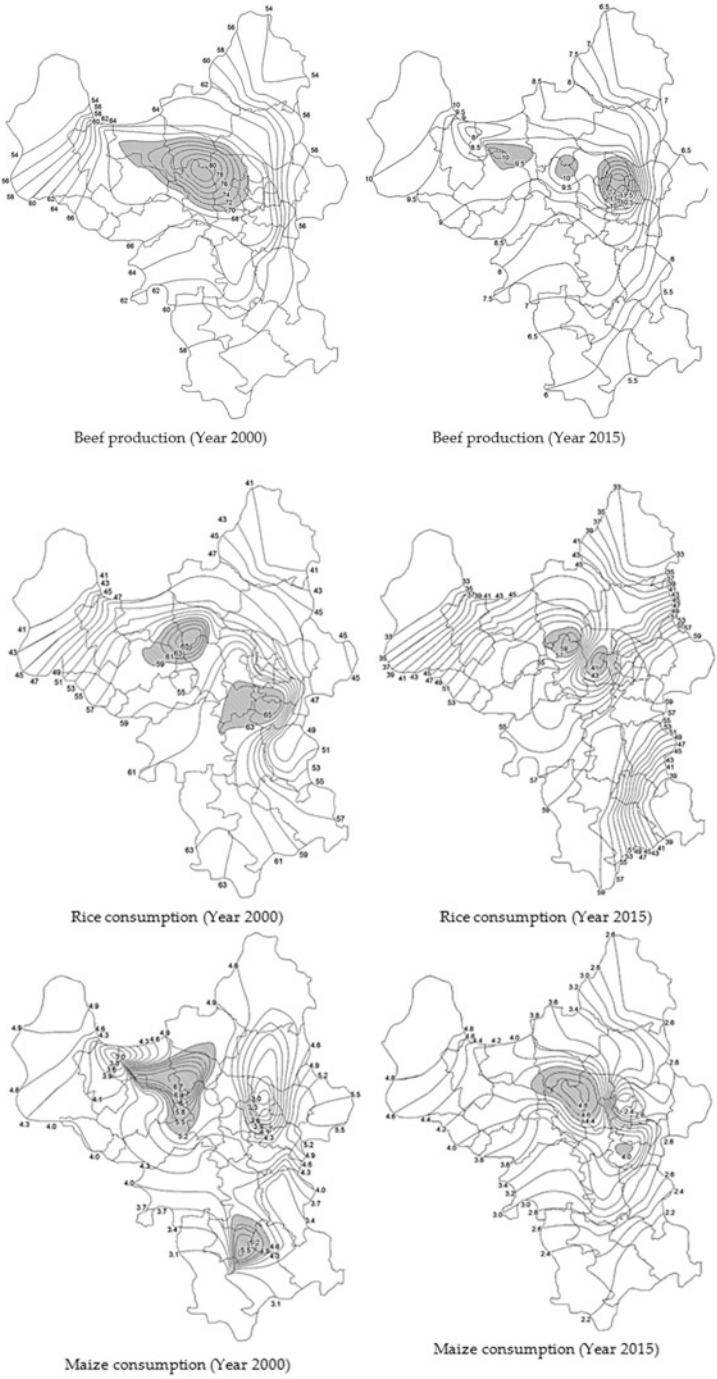

Fig. 20.1 Distribution of agricultural products in Hanoi during 2000–2015 (ton/km)

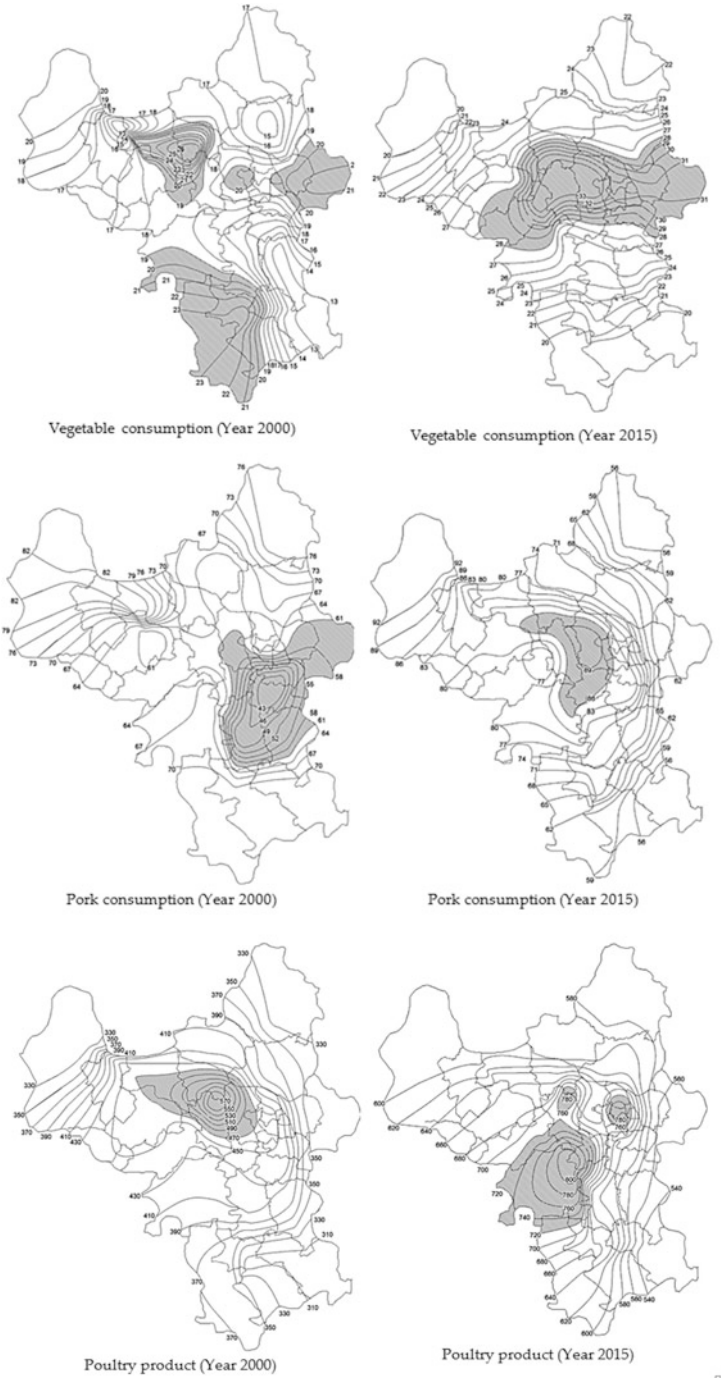

Fig. 20.1 (continued)

Table 20.1 Classified configuration of the iso-product potential distribution in Hanoi city in 2000 and 2015

Agricultural products	Year 2000		Year 2015	
	Consumption type	The maximum point of potential value	Consumption type	The maximum point of potential value
Rice	In the city and in the production area	Tu Liem, Dan Phuong, Chuong My, Ung Hoa	In the city and in the production area	Hoai Duc, Gia Lam, Thanh Oai
Maize	In the production area	Hoai Duc, Ba Vi	In the production area	Ba Vi
Vegetables	In the city and production area	Dan Phuong, Phuc Tho, My Duc	In the city and in the production area	Tu Liem, Dan Phuong, Hoai Duc
Beef	In the city and in the production area	Dan Phuong, Tu Liem, Hoai Duc, and central districts	In the city	Central districts
Pork	In the production area	Ba Vi, Dan Phuong	In the city and production area	Tu Liem, Ba Vi
Poultry	In the city	Central districts	In the city and production area	Tu Liem, Chuong My, central districts

places that have favorable conditions. Due to limited data, this study examined only the six major agricultural products of Hanoi city. Because of the importance of planning and land for agriculture and rural development with trend of commodity production, the province had implemented several policies to promote land consolidation and reduce fragmentation of land, transformation of crops, and etc. The policy was responded and provided some initial performance to develop concentrated production.

Regarding the conversion of iso-potential value, the cause was that the agricultural production in the past was strongly dependent on biophysical condition during the past few years, and the agricultural products were produced on the demand of the market, as the market economy develops stronger in Vietnam. Prior to the expansion, agricultural commodities produced in the former Ha Tay province were not as frequently transported to Hanoi as today. Following the expansion of the city, the yields of vegetables and cereal declined, while livestock production increased. The consumption also changed, and the attraction of the market in the center of Hanoi is stronger than ever before.

The Hanoi model on the structure of agriculture (using linear equations) and the land use can be extended to other areas in Vietnam. Moreover, the gravity model provider information on the potential for labor, resources use out, the accessibility. The urban models or constructs allow defining threshold is out capacities of a locality, a region or establish standards to structure the territory.

The method should integrate economic issues including the movement of goods and income per person. At that moment, it can be applied to addressing economic and social problems.

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Chapter 21
Building a New Management Model for Vietnamese Higher Education Institutions Based on the Made in Vietnam Lean Management

Minh Nguyen Dang and Toan Nguyen Dang

Abstract The purpose of this study is to propose a new management model based on The Made in Vietnam lean management thinking in order to help Vietnamese Higher education institutions restructure themselves their efficiency to deal with difficulties of satisfying labor market's demand. The study employed a qualitative approach. The primary data were collected by observations and in-depth interviews. The participants involved in this study were administrators, professors, lectures, staff, and students from 20 higher education institutions, educational researchers, and enterprise's top managers in Vietnam. Based on Made in Vietnam lean management thinking, this study identified not only tangible wastes but also intangible wastes existing in Higher education institutions in Vietnam. The Made in Vietnam lean higher education management model was proposed. The model is assist-up model, focusing on utilizing employees' intellectual abilities to minimize existing waste and improve efficiency and effectiveness in Higher education institutions. The findings highlight that the proposed management model focusing on utilizing employees' intellectual abilities has implication not only for Higher education institutions in Vietnam, but also for Higher education institutions from other developing countries where the resources and capital investment are constrained.

Keywords Made in Vietnam Lean management · Made in Vietnam Lean higher education management model · Tangible waste · Intangible waste · Tam The

M. N. Dang (✉) · T. N. Dang
VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam

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1 Introduction

Lean management is one of the most advanced management styles that focus on fulfilling customer satisfaction and creating value through waste reduction (Womack et al. 2007; Liker 1999). Despite its manufacturing origin, the lean thinking philosophy has been quickly expanded to new areas such as service, trade, and the public sector (Womack and Jones 2005). In the public sector, Lean was applied in health care and government before higher education (Radnor and Bucci 2011). Lean management has been used in higher education institutions to reduce wastes, make processes flow smoothly, and improve workforce efficiency (Balzer 2010; Kang and Manyonge 2014; Finn and Geraci 2012).

The term "Lean higher education" has been used since 2004 in the USA and 2006 in the UK (Lean HE n.d.). Lean higher education is defined as the application of lean principles and practices in higher education, identifying process flow, defining the value of processes, and eliminating the type of wastes that add no value (Balzer 2010). Lean in higher education has been studied in different contexts from departmental to institutional levels (Balzer 2010). The most popular lean approaches are applied in a number of service areas such as administration, finance, and campus functions; however, they are increasingly being used to improve teaching and research activities directly (Balzer 2010; Kang and Manyonge 2014). Lean implementation enables universities to improve employees' engagement, improve the quality and accuracy of processes, and save time and resources (Finn and Geraci 2012). However, to implement successful lean higher education, it requires the involvement of employees and strong commitment from the most senior administrators (Comm and Mathaisel 2005). Lean higher education implementation also requires an open culture, willingness for employees to work across different departments and administrative levels, a long-term implementation strategy, continuous training programs relating to lean philosophy, and external support from a lean consultant (Balzer 2010; Waterbury 2015). The literature review reveals that Lean for higher education is still a fairly new concept and has much room to explore. Fewer publications focus on the implementation of lean management for universities, especially in developing countries, including Vietnam.

Over the last three decades, Vietnam higher education has fundamentally changed. Vietnamese higher education institutions have expanded in term of quantities, scale, and new training disciplines. Consequently, they have to deal with an increasing number of administrative issues and quality issues. Reforms of the Vietnamese higher education system have been a topic of debate for many years and attracted a lot of local and global attention from researchers and organizations. Some solutions have been suggested such as to change the university's functioning model, give autonomy to universities, or improve the internal democracy and academic freedom, financial reform, etc. (Khanh 2010; Phong and Nhut 2013). However, up to now, there are still many difficulties in transferring research results into practice. Vietnamese higher education institutions are finding a way to restructure themselves to respond to change more quickly and to sustain in the future.

Based on the research gap above, this paper aims to propose a new Made in Vietnam lean higher education management model to help Vietnamese higher education organizations to restructure themselves their efficiency, and then, it could become a promising reference for other education institutions from developing countries.

2 Theoretical Framework

2.1 Lean Application for Higher Education: Identify and Eliminate Wastes

Lean is a management method to simplify and streamline processes by identifying and eliminating wastes (Wedgwood 2007). Waste is defined by Womack and Jones (2003, 2005) as any human activity that absorbs resources but creates no value. Wastes were originally identified for a manufacturing environment (Ohno 1988). Then, wastes have been developed for service areas by several authors including Radnor and Bucci (2011), Sarkar (2008), Waterman and McCue (2012), Kollberg et al. (2006), etc. Sarkar (2008) believed the eight wastes to be universally applicable. Kang and Manyonge (2014) identified wastes in higher education system by considering the basic process, such as lecturing, researching, and support activities. Each group of activities consists of different steps. Each step more or less contributes to the customer satisfaction. Once these value-added steps are identified, then wastes can be eliminated in the higher education system by using lean methods. More importantly, there are intangible wastes which are verified in the context of developing countries, such as Vietnam (Minh 2015).

2.2 Made in Vietnam Lean Management Thinking

The Made in Vietnam lean management thinking is aimed at gaining profit and creating added value for company/organization by utilizing employees' intellectual abilities to continuously improve the business process to minimize waste costs. The concept of Made in Vietnam lean management thinking is explained by the following equations (Source: Minh 2015):

$$\text{Profit} = \text{Revenue} - \text{Cost} \tag{21.1}$$

$$\text{Costs} = \text{Actual costs} + \text{Waste} \tag{21.2}$$

$$\text{Waste} = \text{Tangible waste} + \text{Intangible waste} \tag{21.3}$$

According to these equations, to earn more profit, an enterprise can reduce costs or increase revenue. It is noted that it is easy to change the revenue as it mostly

depends on external factors. It is more feasible to reduce cost. Thus, waste is a component needed to be cut or eliminated. According to the Made in Vietnam lean management, there are two types of wastes: tangible and intangible. The former is easy to identify in the business process, e.g., unnecessary inventory, overproduction, waiting time, unnecessary transportation and movement, and defects. In practice, most companies have made an effort to minimize their tangible waste. The intangible waste is not visible and harder to identify. The intangible waste can be classified into three groups including thinking patterns (cannot do attitude, afraid to think of change, conservative and traditional thinking), working approach (missing the continuous improvement in current methods and processes), and missing opportunities (growth chances and business opportunities). Indeed, the intangible waste is generally larger than the tangible waste (Minh 2015).

Minh and Ha (2016) also proposed that "Tam The" is one of the distinct elements of Made in Vietnam lean management thinking. "Tam Thê" is a management concept, which is defined by the following formulas (Source: Minh and Ha 2016):

$$\text{Tâm Thế} = \text{Thấu 1} + \text{Thấu 2} + \text{Ý (Vietnamese concept)}$$

$$\text{Tam The} = \text{Deep Understanding 1} + \text{Deep Understanding 2} + \text{Consciousness}$$

"Tam The" includes two understandings and one consciousness. Deep Understanding 1 is to comprehend that a work (job/study) that a person implements benefits him/her. Deep Understanding 2 is to comprehend that by doing the work seriously (job/study), he/she can improve individual thinking power (when studying) and working possibilities (when implementing a job), thereby benefiting himself/herself. Consciousness is to comprehend that people should have good behavior, attitude, and morality toward work to reflect and implement the two understandings.

"Tam The" is a Vietnamese word that refers to the deep understanding of employees and managers about the benefits of their tasks for themselves. If the Made in Vietnam lean management is about the human intelligence, then "Tam The" is about the spiritual power. "Tam The" helps to integrate people in the organization and redirect their thinking on a common axis to consolidate collective knowledge and strength of all the concerned people for creating added value for the organization. Therefore, "Tam The" plays an important role in establishing the thinking foundation for the successful operation of Vietnamese organizations.

Practically, the Made in Vietnam lean management has been applied in Vietnam since 2014. During the period from 2014 to 2017, the Made in Vietnam lean management has been used in over 200 Vietnamese's private enterprises including not only small enterprises (with fewer than 100 employees) but also big enterprises (with over 15,000 employees). The Made in Vietnam lean management has been recognized by the Vietnamese enterprises as the advanced management philosophy that is suitable for all types of businesses in Vietnam.

A higher education institution can be considered as a special business organization. In equation (1), higher education institution's profits need to be much more broadly understood. It is not just about the money, but it is also about added value that an institution can create for the society and the institution itself. For society,

value added is a high-quality human resource and high-quality knowledge. For university itself, added value is the money, reputation, and sustainable development, etc.

According to the Made in Vietnam lean management thinking, to create more added value, the higher education institutions can utilize employees' intellectual abilities to minimize waste cost and continuously improve its process such as governance, teaching, learning, research, and support services. There are also two types of wastes existing in the university process, namely: (1) tangible waste and (2) intangible waste.

The Made in Vietnam lean management thinking is used as the theoretical framework for this study. Based on this thinking, the study is organized as follows: (1) to identify existing waste in current activities (governance, teaching, research, and service support); and (2) to propose new management model based on the Made in Vietnam lean management thinking to reduce wastes in Vietnamese higher education institutions.

3 Methodology

3.1 Research Framework

The research approach and processes are presented in Fig. 21.1.

We firstly develop a database for this research. In order to develop the theoretical framework and rationale for research, the secondary data are collected through reviewing the relevant literature of Lean higher education, Vietnam higher education management, and the Made in Vietnam lean management. The primary data are collected via in-depth interviews and observations to realize the knowledge and situation of Higher education institutions in Vietnam. Then, the authors analyze the data using the Made in Vietnam lean thinking framework to identify the existing wastes in the Vietnamese higher education institutions. Based on the analysis, the authors suggest a Made in Vietnam Lean Higher Education management model for Vietnamese Higher education institutions to eliminate wastes. Next, the authors invite educational experts, universities' administrators, and business executives to participate in seminar to discuss the feasibility of the model, find out constraints of the model in different contexts, and suggest the optimized model for universities in Vietnam. Finally, a case study is used to reconfirm the validity of this model.

3.2 Data Collection Methods

3.2.1 Secondary Data Collection:

The collected secondary documents and information are (Fig. 21.2):

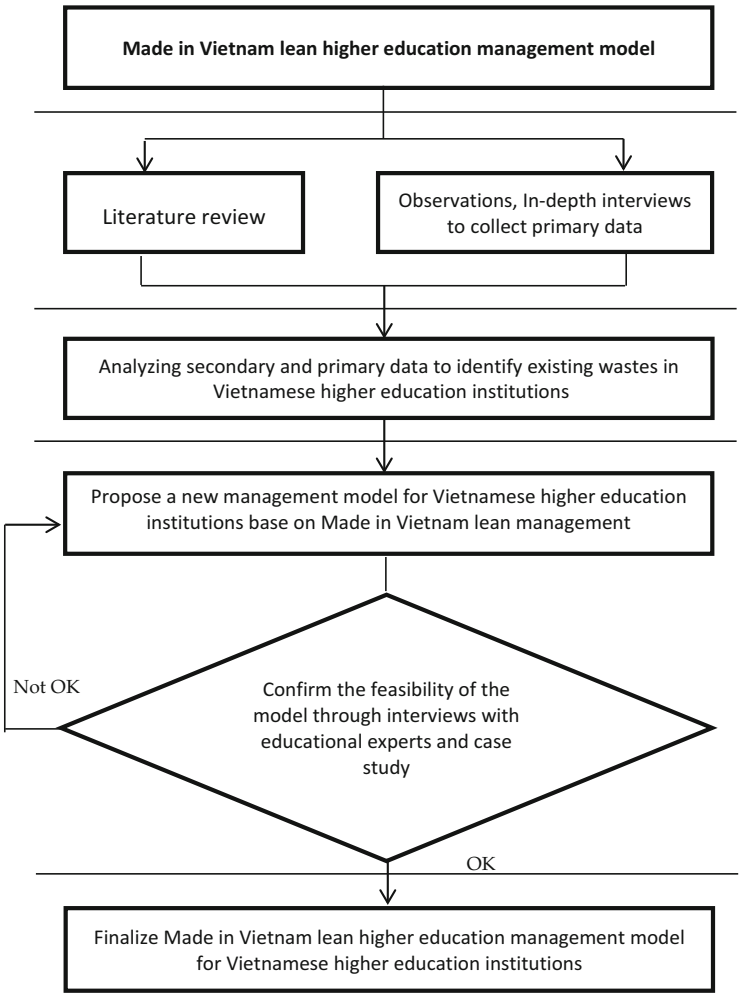

Fig. 21.1 Research process

- International research related to the topic of lean in higher education including implementation model and successful implementation experience.
- International and Vietnamese research related to the Vietnamese higher education.
- Research related to the Made in Vietnam lean management.

3.2.2 Primary Data Collection

Primary data are collected by observations and in-depth interviews as below:

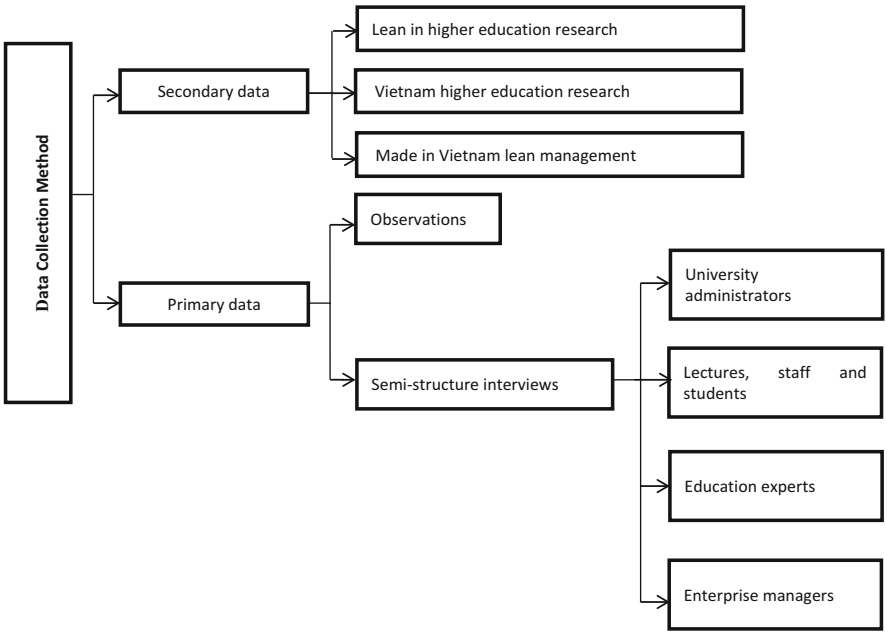

Fig. 21.2 Data collection

Observations

Observations were conducted on a sample of 20 typical universities from the northern to the southern regions of Vietnam. The researchers observed governance, teaching, learning, research activities, and support services through participating in 50 class hours, 10 seminars, research workshops, and internal meetings at these specific universities. Then, during these activities, the existing wastes were identified by using the Made in Vietnam Lean Management thinking.

In-depth Interviews

The purpose of in-depth interview is to reconfirm the existing wastes at educational institutions, to understand current management system of higher educational institutions. The in-depth interview with diverse participants has helped the authors to have objective research data from multiple perspectives. This helps to add the validity for this qualitative research.

In-depth interviews were conducted as follows:

Round 1: This round was conducted in 10 research samples to test and finalize the question framework for the following interviews.

Round 2: The in-depth interview was conducted in two groups. The first group is principals, assistant principals, heads of departments, lecturers, and students of these universities. The second group is a representative sample of 80 enterprises' managers who directly recruit graduate students.

The first group was interviewed in a 30-min interview in personal or group setting. In each interview, participants were first asked to identify existing wastes

Table 21.1 Summarize the participants of the interviewers

Type of participant	Numbers of participant
Round 1	
Principal and vice principal	1
Head department and Vice head department	1
Lecturers	1
Students	2
Staff	1
CEO enterprises	1
Human resources managers	1
Round 2	
Principal and vice principal	30
Head department and Vice head department	30
Lecturers	45
Students	50
Staff	30
CEO enterprises	30
Human resources managers	50
Round 3	
Internal university administrators (principal, vice principal)	20
Educational researchers	20
Business executives	30

of activities that they directly or indirectly experienced in the educational system of university from their own perspective.

The second group was interviewed for 30 min with the aim of finding and identifying existing wastes in higher education from their own perspectives. At the same time, their opinions about the solutions to solve the problem, including applying Made in Vietnam Lean Management, were collected.

Round 3: Educational researchers and business executives were interviewed to collect practical assessment about the model which authors propose for higher education institutions in Vietnam (Table 21.1).

4 Results

4.1 Wastes in Vietnamese Higher Education Institutions

4.1.1 Waste in Teaching, Learning, Research, and Support Services in Vietnamese Higher Education Institutions from the Perspective of Administrators, Lecturers, Professors, Staff, and Students

Through in-depth interviews, existing waste in teaching, learning, research activities and support services in Vietnam higher education institutions is identified from the interviewee's perspectives. All typical wastes are illustrated in Table 21.2.

Base on the Made in Vietnam Lean Thinking, authors identified tangible wastes and intangible wastes existing in Vietnam higher education institutions. Especially, four kinds of intangible wastes in the higher education system in Vietnam were identified, including waste of thinking capacity, working method, missing opportunities, and the inefficient transferring of knowledge. Thinking capacity is translated by none of continuous improvement thinking in activity chain of educational institute. Working method means knowing a better method but do not want to apply. The third one is missing opportunities for development by using current method and traditional thinking. The last one is the waste of theoretical knowledge that cannot be absorbed and transferred into practice. The intangible wastes in higher education institutions are the new findings that have not only the implications for Vietnam, but also other developing countries. When the higher education institutions would like to apply lean management, they should focus on both tangible and intangible wastes.

Table 21.2 Wastes in Vietnamese higher education institutions

	Tangible wastes	Intangible wastes
Teaching		
Teaching programs	Unnecessary courses Practical and theoretical knowledge are not allocated appropriately in teaching program Use the foreign program framework in advanced teaching program without changing content to relevant to the reality of Vietnam	None of continuous improvement thinking in making curriculum Respond slowly to market demand Inefficient to transfer theoretical knowledge into practice
Teaching material	Outdated teaching material	
Teaching method	No diversification in teaching methods Slowly update new teaching methods	Traditional teaching method could not promote creativity and self-study of student None of continuous improvement thinking in teaching method
Research		
Research	The percentage of lecturers engaged in scientific research is low Low diversity in research fields Slowly update new research content and research method	Strategic thinking in designing research system is not accounted for practical factors Inefficient to transfer theoretical knowledge into practice
Support services		
Support services	Unable to deliver service in time due to complex, lengthy procedures or errors in the services transactions Ineffective communication between providers and users Excess facilities which may not be in use at all Waiting for seeking information, equipment, or tools which need to used	Do not have continuous improvement activities

Table 21.3 Waste in the Vietnamese higher education system from employers' perspectives

Tangible waste	Intangible waste
Lack of practical knowledge Poor soft skills Poor hard skills Lack of professional behavior	Unclear purpose of study and career orientation Inability to transfer knowledge into practices Lack passion and enthusiasm for work

4.1.2 Wastes in Vietnam Higher Education Institutions from the Employers' Perspective

From the employer's point of view, the biggest waste in Vietnam higher education system is that majority of graduate students do not meet the employer's requirement related to specialized knowledge, personal skill, and "Tam The." Through in-depth interviews, interviewees indicated specific wastes that exist in the graduate students (Table 21.3).

4.2 The Proposed Made in Vietnam Lean Higher Education Management Model

4.2.1 Proposed Basis

The Made in Vietnam Lean management model is verified for its validity, performance, and efficiency through more than 200 enterprises in Vietnam. Based on this theory and the findings from in-depth interviews, authors proposed a new Made in Vietnam lean management model for higher education systems. It is a bottom-up model with the "Tam The" foundation. This model helps to enhance the employees' engagement, in reducing waste and improving the efficiency of the operation.

A university/educational institutes can be considered as a special business organization, university input is human, and university output is also human. The Made in Vietnam lean higher education is established based on the Made in Vietnam lean management thinking. The model is assist-up model, focusing on utilizing employees' intellectual abilities to minimize existing waste, to create added value to the higher education institutions, in particular, and the education institutions in Vietnam, in general. This model solves the waste not only from higher education institutions' perspective, but also from enterprise's perspectives.

This model has implication not only for Vietnam, but also for other developing countries where the resources and capital investment are constrained. That is the reason why they should pay more attention to human resources to encourage people to participate in the transformation of higher education institutions.

4.2.2 The Proposed Made in Vietnam Lean Higher Education Management Model

Tam the—the foundation of the Made in Vietnam lean higher education model (Fig. 21.3).

The education system in general and higher education system in particular is operated based on three fundamental factors: (1) Human; (2) Software, and (3) Hardware. "Human" includes all persons directly or indirectly involved in the education system, such as administrators, lecturers, staff, students, educational researchers, employers, and investors. "Software" is defined as thinking, philosophy, management methods, and operational procedures. And, "Hardware" refers to infrastructure, materials, and capital. Among the three factors above, the human factor is the special factor that directly implements the other two factors. The human factor plays the major role in operating higher education system.

According to Made in Vietnam Lean management, in regard to the "human" factor, the primary concern is the "Tâm The" of people. Building and maintaining "Tam The" for human factor is the first priority in the model. If university administrators have good "Tam The," they will show their strong commitment to implement the Made in Vietnam Lean higher education management model until it succeeds. If lecturers, researchers, and staff have good "Tam The," they will actively involve in implementing the model.

The responsibility of Vietnam state administrative agencies in the proposed Made in Vietnam lean higher education model

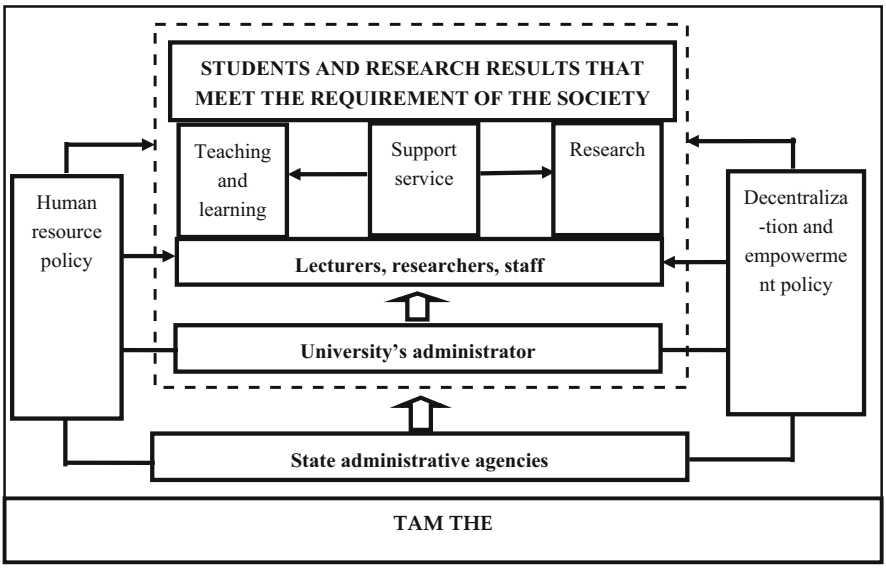

Fig. 21.3 Made in Vietnam lean higher education management model (Source: Proposed by authors)

The Made in Vietnam lean higher education management model is an assist-up model, which creates a favorable climate for change. In the proposed model, the Vietnam state administrative agencies including government, Ministry of education and training, and other relevant agencies play important supportive roles in improving universities' capacity to react to changing society demand. The government and Ministry of education and training take responsibility for defining the clear philosophy of education and establishing a national strategy for development education. In addition, the ministry of training and education is responsible for creating and maintaining the competitive environment among universities by empowering the autonomy to the universities that can develop and implement their own strategies, policies, and educational programs. University has the freedom to manage its own affair. However, the Ministry of education and training also needs to establish a flexible monitoring mechanism to ensure that all specific strategies and policies at the university level are consistent with the national education development strategies.

The responsibility of the university's administrator in the proposed Made in Vietnam lean higher education model

Utilizing employee's intellectual abilities to minimize waste cost is vital to Made in Vietnam Lean management philosophy. Therefore, the critical responsibility of the university's administrator is to improve and maintain the employee (lecturers, researchers, and staff) involvement in university activities. According to the Made in Vietnam Lean higher education model, university administrators play the supportive role and empower employee authority to take full control of their work while providing the resources necessary to perform effectively. The supportive role of university administrator is expressed through following specific actions:

Set the overall vision and strategy of the university and communicates it to all stakeholders, and show their strong commitment to implementing the strategy for university development.

Training "Tam The" for all employees. Their employees must be clear of the purpose, the real and potential benefit of the Made in Vietnam lean implementation for themselves and their organizations.

Give the lecturers authority to take full control in the formulation and implementation of teaching and research.

Create environment that foster continuous improvement, comply with the raised problems, and provide a space for the free and open discussion of ideas.

Celebrate and recognize the valuable contribution of the employee by reward policies. It makes employees feel appreciated and their efforts recognized.

The responsibility of lecturers, researchers, and staff in the proposed Made in Vietnam Lean higher education model

The employee including lecturers, researchers, and staff are the most valuable resources in the university. The success of the Made in Vietnam lean management implementation in the university relies very heavily on each individual employee. Each employee takes responsibility to identify the wastes that occur in the detail of

Table 21.4 Proposed solutions to reduce waste in the Vietnamese higher education institutions

	Solutions
Teaching activities	
Lecturers	Training "Tam The" for lecturers to enhance their involvement in continuous improvement process in all universities' activities Enhance quality of lecturers by various ways such as periodic training on professional knowledge; create an interactive community for sharing knowledge among faculty members, etc. Take the customer (students, stakeholders, such as enterprises) satisfaction as a criterion for evaluating performance of lecturers
Curriculum	Continually review and refine the curriculum to respond timely to changing society demand Focus on fundamental knowledge and balance practical and theoretical knowledge in curriculum Implement "Tam The" teaching program in parallel with other teaching programs Transfer research results into curriculum Foster the involvement of stakeholder such as employers in the design, implementation, and evaluation of curriculum
Teaching methods	Foster diversification of teaching methods and continuous improvement of traditional teaching methods Create real situations to provide opportunity for students to apply knowledge in practice Integration of Tam The and knowledge in every teaching activities
Learning environment	Expanding learning environment, not to be limited to classroom. Learning resources are everywhere, so lecturers need to provide guidance and tutoring to help students gain practical knowledge from outside the university.
Researching activities	
	Training "Tam The" of research for lecturers Improve research capacity of lecturers through appropriate training Create attractive conditions for research such as diverse funding for research, implement reward policy, and provide knowledge sharing platform. Foster the applied research in parallel with basic research by applying the preorder systems. The orders come from enterprise, organization, and society. Establish research evaluation system with the involvement of stakeholder such as enterprises and society to evaluate the practical effectiveness of research
Support activities	
	Implement the "5S Made in Vietnam" (Sort—Set in order—Shine—Standardize—Tam The) to create and maintain good working environment Create a culture of continuous improvement (kaizen) among staff at all levels by implementing Kaizen suggestion system

their job and seeking better way of doing the job to eliminate or reduce the waste. Their knowledge, ability, and skill will help the continuous improvement process to better performance and efficiency.

Proposed solutions to reduce existing waste in Vietnamese higher education institutions (Table 21.4)

Table 21.5 Summary of the evaluation results

Interviewees	Quantity	Results
Internal university administrators (principal, vice principal)	20	17/20 interviewees agreed that the model is realistic and feasible for implementation
Educational researchers	20	15/20 interviewees agreed that the model is realistic and feasible for implementation
Business executives	30	24/30 interviewees agreed that the model is realistic and feasible for implementation

4.3 Verify the Feasibility of the Proposed Model.

With the aim of verifying the feasibility of the proposed model, several in-depth interviews were conducted with the participation of internal university administrators, educational researchers, and business executives. The evaluation results are summarized in Table 21.5.

5 Conclusions

Based on the Made in Vietnam lean management, this research identified existing wastes in Vietnamese higher education institutions, not only tangible wastes but also intangible waste. Then, this research also proposed a Made in Vietnam lean higher education management model. The given model has been highly appreciated by experts for the practicality and feasibility. Moreover, this model has reconfirmed the validity by a successful case. The model can be used not only for the Vietnamese higher education institutions, but also for educational system in other developing and developed countries where the resources are limited. For further research, a performance index will be studied to assess a higher education institute by quantitative method and with further applications.

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Chapter 22
TAM THE: Key Factor in the Made in Vietnam Lean Decision-Making Method

Minh Nguyen Dang

Abstract Vietnamese enterprises lack a good-quality support model for their management decisions. It is necessary to carry out research to build an appropriate decision-making model for Vietnamese enterprises. The first aim of this paper is to examine the effectiveness of Made in Vietnam lean decision-making model in eliminating and reducing existing wastes in the decision-making process of Vietnamese enterprises. The second aim is to determine the priority of variables involved in the model and the most important factor to ensure the application effectiveness. The model was applied to 60 Vietnamese enterprises. To achieve the purpose of the study, a multi-method design is used, which includes observation, semi-structure survey, and in-depth interview. The result of the research indicates that the model has succeeded in eliminating and reducing five existing types of wastes in the decision-making process in Vietnamese enterprises. In detail, there are wastes in human resources, waste in times, waste in information, waste in methods, and waste in high failure rate. Last but not least, "Tam The" is the most important variable that needs to be considered first in Made in Vietnam lean decision-making model. The Made in Vietnam lean decision-making model has been proved as a new and advanced decision-making model by Vietnamese enterprises. This model can be used for enterprises in both developing and developed countries.

Keywords Made in Vietnam lean management philosophy · Decision-making model · Tam The

M. N. Dang (✉)
Vietnam National University, University of Economics and Business, Hanoi, Vietnam

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1 Introduction

Decision-making is a fundamental skill that each enterprise needs to maintain and expand for their business. Incorrect decisions may lead to loss or even to the collapse of an organization. There are a lot of decision-making research that has introduced theories, models, techniques, and practical tools to maximize the effectiveness of decision-making in companies (Sacks et al. 2007; Mao and Zhang, 2008; Božičković 2012). However, there have not been any decision-making studies conducted in Vietnam. There is no published official book (or documents) related to decision-making models, especially the ones combining both lean philosophy and simulation. Furthermore, Vietnamese enterprises would not apply effectively and directly the decision-making models which have been studied and applied successfully in the world due to differences in organizational cultures, human resource characteristics, finances, and the development of science and technologies. Thus, it is necessary to conduct research to build an appropriate decision-making model for Vietnamese enterprises.

In prior study, the author developed a Made in Vietnam lean decision-making model for Vietnamese enterprises from the Made in Vietnam lean management. In this research, the author applied the model to 60 Vietnamese enterprises to confirm the effectiveness of Made in Vietnam lean decision-making model in practice and finalize the model to ensure the highest effectiveness when applied in practice. To fulfill the aim of this research, the following objectives were formulated: (1) Investigate wastes that Vietnamese enterprises are facing in the decision-making process; (2) evaluate the effectiveness of Made in Vietnam lean decision-making model in cutting existing wastes in decision-making process; and (3) determine the priority of all variables involved in the model and find out the most important factor ensuring the application effectiveness.

1.1 The Made in Vietnam Lean Decision-Making Model

The Made in Vietnam lean decision-making model was built from the made in Vietnam lean management thinking (Fig. 22.1). The model also involves the current situation of decision-making process in Vietnamese enterprises. The model is explained as follows:

The proposed decision-making model includes three main parts:

- AS-IS model: imitation decision context, input in decision-making process.
- The Made in Vietnam lean management philosophy: fundamental thinking to build the management decision-making alternatives.
- TO-BE model: evaluation alternative, output in decision-making process.

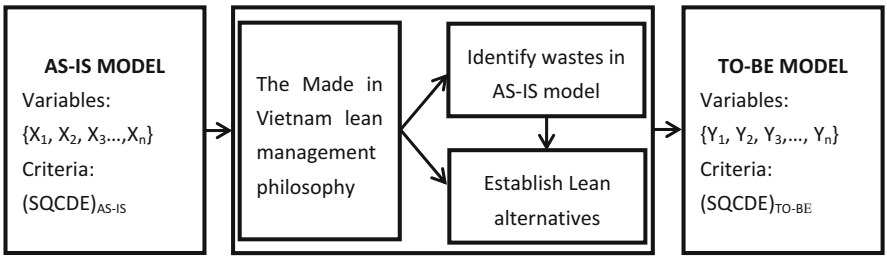

Fig. 22.1 The made in Vietnam lean decision-making model (Minh 2015)

1.1.1 AS-IS Model

Being considered as an input in the decision-making process, AS-IS model describes an imitation of the current decision context. The AS-IS model helps decision makers to deeply understand the decision context (e.g., the current operation management or the project situation. . .)

$$\text{AS} - \text{IS model includes } \{X_1, X_2, X_3 \ldots, X_n\}$$

where X represents the project essential variables, n represents number of variables.

The AS-IS model is established by a set of essential variables corresponding to the significant entities in the decision context. Each project has differential essential variables which depend on decision's objectives and are selected by decision makers. All variables are divided into five groups, namely:

Group 1: "Tam The": Including all variables that describe "Tam The" of all related people.

Group 2: Man: Including all variables that describe people who are related to the decisions (worker, supplier, competitor, etc.).

Group 3: Method: Including all variables that describe the methods used in the decision-making context.

Group 4: Machine: Including all variables that describe the machines used in the decision-making context.

Group 5: Material: Including all variables that describe the materials used in the decision-making context.

To evaluate the decision fully and directly, the comprehensive criteria for the selection of alternatives need to be established. For each project, we have:

$S = \{S_1, S_2, S_3 \ldots S_n\}$ is the set of all criteria measuring Safety

$Q = \{Q_1, Q_2, Q_3 \ldots Q_n\}$ is the set of all criteria measuring Quality

$C = \{C_1, C_2, C_3 \ldots C_n\}$ is the set of all criteria measuring Cost

$D = \{D_1, D_2, D_3 \ldots D_n\}$ is the set of all criteria measuring Delivery

$E = \{E_1, E_2, E_3 \ldots E_n\}$ is the set of all criteria measuring Environment

For different projects, the decision-making criteria will be different. Decision makers and managers will directly select the criteria for decision-making on the basis of the actual situation and condition of each project.

1.1.2 The Made in Vietnam Lean Management: Fundamental Thinking in Building the Management Decision-making Alternatives

In the context of decision-making process in Vietnamese enterprises, The Made in Vietnam lean management thinking is interpreted as follows: The Made in Vietnam lean management is the thinking of creating the optimal management decisions for an enterprise/organization by utilizing employees' intellectual abilities to build alternatives which minimize existing waste (intangible and tangible wastes) in the decision-making context and at the same time prevent potential wastes that can arise when decisions are deployed in practice.

After the AS-IS model in each project has been built, based on the lean management philosophy, decision makers will identify existing tangible and intangible wastes in the AS-IS model. The wastes can potentially cause the failure of achieving the initial target. Then, the involved parties will build alternatives to minimize these wastes.

Alternatives are established based on the Made in Vietnam lean management which must meet two requirements:

1. Solve the existing wastes at the maximum level (tangible waste and intangible waste).
2. Prevent potential problems at the maximum level.

$$\text{Lean alternative includes } \{A_1, A_2, A_3 \ldots A_n\}$$

where A represent solutions to reduce waste, n represent number of solutions

All solutions also are divided into five groups corresponding to five variables, namely: (1) "Tam The"; (2) Man; (3) Method; (4) Material; (5) Machine.

1.1.3 TO-BE Model

The TO-BE model is used to describe a future desired situation to implement a specific alternative to reality. According to the characteristics of decision, a specific method is used to evaluate if the alternative's effectiveness is different (Fig. 22.2). Based on the result of the evaluation criteria set from the beginning, the before–after comparison will be conducted by the involved managers. Then, managers will discuss to choose the best alternative.

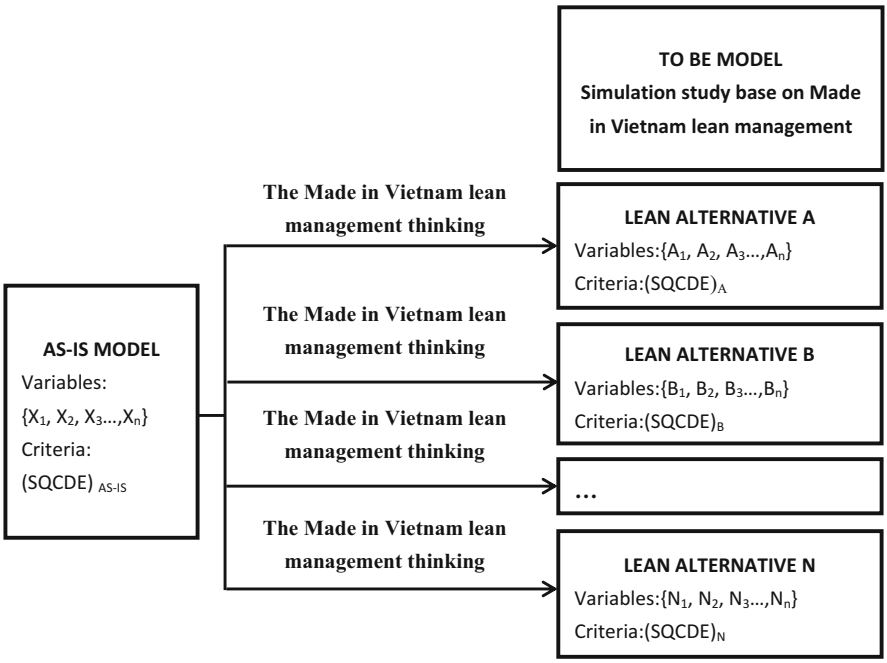

Fig. 22.2 TO-BE model

1.2 The Made in Vietnam Lean Management Philosophy

The Made in Vietnam lean management philosophy has been built to close the gap between international lean philosophies to Vietnamese culture. This philosophy has been applied successfully in over 200 enterprises in Vietnam.

The Made in Vietnam lean management philosophy is a philosophy to gain profit and create added value for company/organization by empowering employees to use human intelligence to continuously improve the business process to minimize waste costs. The concept of the Made in Vietnam lean management is explained by the following equations (Source: Minh 2015):

$$\text{Profit} = \text{Revenue} - \text{Cost} \tag{22.1}$$

$$\text{Costs} = \text{Actual costs} + \text{Waste} \tag{22.2}$$

$$\text{Waste} = \text{Tangible waste} + \text{Intangible waste} \tag{22.3}$$

According to Eq. (22.1), the better scenario to increase profits should be wastes' cost reduction. The Made in Vietnam lean management provides methods and tools to help enterprises to identify existing wastes in the business process and to gradually eliminate these wastes. There are two types of wastes: tangible and intangible. It is easy to identify tangible wastes in the business process, e.g., inventory,

Table 22.1 Summary of the improvements from implementing the Made in Vietnam in enterprises

	1 year applying (%)	2–3 years applying (%)	4 years applying (%)
Increased productivity	25–35	75–100	150–200
Improved quality	7	15–25	30–40
Reduced cost	7	10–15	20–30
Enhanced the cohesion between employees and enterprises	30	50–70	50–60

Source: Summary from the annual report of efficiency after applying the Made in Vietnam lean management

overproduction, waiting time, unnecessary transportation and motion, and defects. It is harder to identify intangible wastes. Intangible wastes include waste in mindset (such as the lack of true thinking power and skill, the reluctance to work, and the conservative and traditional thinking), waste in working approach (such as lack of continuous improvement in terms of methods and processes to operate the business), and waste in missing opportunities (such as missing growth chances and business opportunities). Indeed, intangible wastes are generally considered more than tangible waste.

The Made in Vietnam lean management philosophy has been implemented in Vietnam since 2014. Today, the Made in Vietnam lean management philosophy has been applied by more than 200 Vietnamese's private enterprises from manufacturing to service area. This philosophy has not been only used by small and medium enterprises but also big ones. Those enterprises have recognized the performance improvement in terms of productivity, products and service quality, and customers' satisfaction after nearly 6 months of applying the Made in Vietnam lean management philosophy. Meanwhile, the production cost has decreased because of eliminating wastes in operation processes. The enhanced cohesion between employees and the enterprises has been confirmed by the decline in employee turnover rate, thanks to the application of the Made in Vietnam lean management (Table 22.1).

The Made in Vietnam management philosophy has been recognized by Vietnamese enterprises as a new and advanced management method that is suitable for all types of businesses in Vietnam.

2 Methodology

2.1 Research Framework and Research Methods

The research used the qualitative method that is suitable for the research objectives listed above. The research framework is presented as in Fig. 22.3:

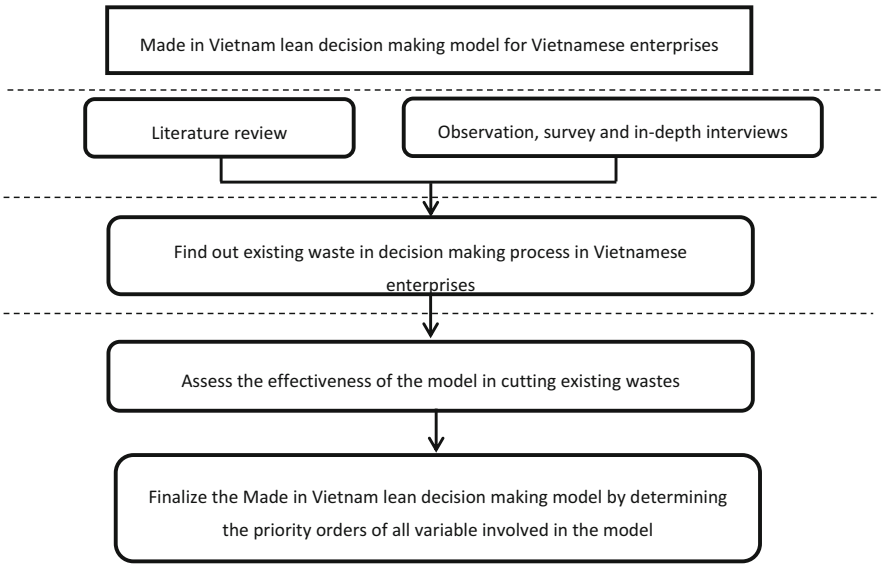

Fig. 22.3 Research framework

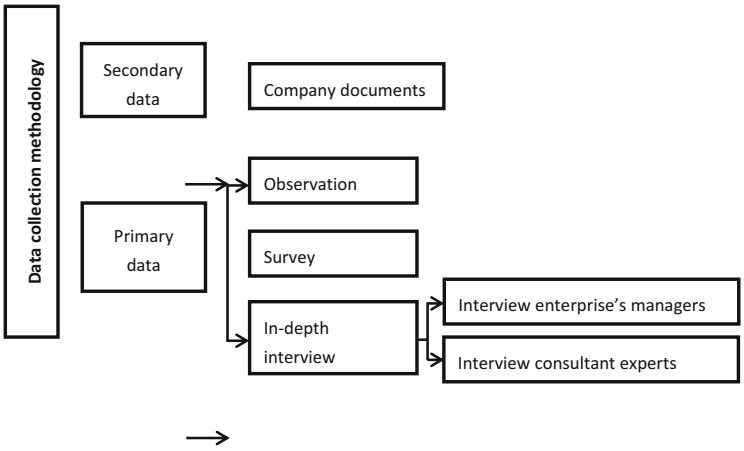

Fig. 22.4 Data collection methods

2.2 Data Collection Method

During one year, from June 2017 to June 2018, the model was applied to 60 Vietnamese private enterprises from manufacturing to service. The research data were collected by a multi-method such as observation, survey, and in-depth interview (see Fig. 22.4).

2.2.1 Secondary Data Collection Methods

The collected secondary documents and information included historical data of actual business performance when enterprises applied the Made in Vietnam lean decision-making model in reality. These data were to support the assessment of the effectiveness of the model in Vietnamese enterprises.

2.2.2 Primary Data Collection Methods

Primary data in the study were collected through three methods:

Observation Method
Observations were conducted on the sample of 20 typical enterprises operating in mechanical manufacturing, retailing, and logistic services in the scope of the research. The author focused on the process of applying the Made in Vietnam lean decision-making model in those companies to assess the application effectiveness.

Survey Method
The method was implemented by conducting investigation and survey via questionnaires on 60 enterprises which applied the Made in Vietnam lean decision-making model (Table 22.2).

The content of the survey covered two main parts:

Part 1: Information about enterprises and participants involved in the survey.

This section was used to group the survey's enterprises and survey's respondents. Section 1 provides the following information: the size and the field of each enterprise and basic information of survey participants (occupation, position in the enterprise, and contact information).

Part 2: The effectiveness of the Made in Vietnam decision-making in practice.

This section was designed with 14 semi-closed questions to confirm the validity of the model in Vietnamese enterprises through 3 main parts: (1) Find out the existing wastes; (2) evaluate the effectiveness of application; (3) find out the most important variables in the decision-making model.

In-Depth Interviews Method
In-depth interviews were conducted after the survey data are analyzed. Twenty enterprise's top manager and middle managers were selected in the survey respondents by the representative sampling method. On average, each interview lasts

Table 22.2 Number of respondents in the survey

Enterprises		Respondents	
Big enterprises	10	Top managements	10
		Middle managements	20
SMEs	50	Top managements	50
		Middle managements	50

30 min to reaffirm the results obtained through the survey and explore the most important factors that determine the effectiveness of the model.

3 Results

3.1 Wastes in Decision-making Process in Vietnamese Enterprises

After analyzing the primary data, the author identified five types of wastes in the decision-making process in Vietnamese enterprises. These wastes are summarized in Table 22.3.

Table 22.3 Five existing types of wastes in decision-making process in Vietnamese enterprises

Wastes	Details
Waste in human resources	Decentralization and empowerment in decision-making are not effectively implemented in Vietnamese enterprises. Top-level employees in company are usually overloaded by the number of decisions to make. Subordinates try to evade decision-making and push the responsibility higher up. 75% of decisions were made by senior executives in the business; only 25% of decisions were made from lower level
Waste in time	Time is not used effectively in the decision-making process in Vietnamese enterprises. For example, group discussion is often employed by companies to make important and complicated decisions. This method is likely to provide more accurate decision-alternatives due to the diversity of experience and multidimensional perspectives of all the involved members. However, due to the unique cultural characteristics of Vietnamese working environment, decision-making by group discussion often takes a lot of time before consensus among different members is reached. Sometimes, these discussions are not very effective
Waste in information	Lack of input information often occurs in the decision-making process in Vietnamese enterprises. Due to the lack of standard criteria to collect input data, too much unnecessary information is collected. On the other hand, the necessary information is often missing
Waste in methods	Vietnamese enterprises lack a lot of useful methods to support decision-making process effectively, such as decision-making thinking, decision-making model, and alternative evaluations
Waste in high failure rate	Vietnamese enterprises experience a high failure rate when making decisions in reality, which has created a big waste for the enterprises The success rate of making decision in enterprises is only 57%, which means that 57% of decisions applied in practice effectively met the original goal. The failure decision creates both tangible and intangible wastes for company. The tangible wastes are easy to identify such as waste of money, time, and human resources. On the other hand, the intangible wastes are the biggest waste of business, but harder to identify. An example of this is waste of opportunity for development, reducing the competitiveness of enterprises in the market

3.2 The Results of Applying the Made in Vietnam Lean Decision-making Model in Vietnamese Enterprises

After applying in practices, the validity of the model has been confirmed. The result (Table 22.3) shows that existing wastes in the decision-making process have been reduced as a result of applying the Made in Vietnam lean decision-making model (Table 22.4).

3.3 "Tam The," the Most Important Factor of the Made in Vietnam Lean Decision-Making Model

During the application process, "Tam The" has been confirmed as the most important factor of The Made in Vietnam lean decision-making model. "Tam The" also has been proved to be the factor that had the greatest impact on the effectiveness of the model. "Tam The" has been recognized as a unique Vietnamese management; "Tam the" is defined by the following management function (Source: Minh and Ha 2016):

$$\text{Tâm Thế} = \text{Thấu 1} + \text{Thấu 2} + \text{Ý (Vietnamese concept)}$$

$$\text{Tam The} = \text{Deep Understanding 1} + \text{Deep Understanding 2} + \text{Consciousness}$$

"Tam The" includes 2 understandings and 1 consciousness. Deep understanding 1 is to comprehend that a work (job/study) that a person implements benefits himself/herself. Deep understanding 2 is to comprehend that by doing the work seriously (job/study) can he/she improve their thinking capacity (when studying) and working possibilities (when implementing a job), therefore bring benefits for himself/herself. Consciousness is to understand that people should have good behavior, attitude, and morality with the work to reflect and implement 2 understandings.

Human factor determines the success of the Made in Vietnam lean decision-making implementation in practice. When we mention the human factor, the main thing that we should consider as the most important is "Tam The." "Tam The" is related to two types of persons: (1) Tam The of decision maker and (2) Tam The of person who implements decision.

Table 22.4 Results of applying

Wastes	Average (%)
Reduced waste in human resources	35
Reduced waste in time	55
Reduced waste in information	40
Reduced waste in methods	55
Reduced waste in high failure rate	45

Source: Authors

Tam The of Decision Maker

Decision makers need to build and maintain their own "Tam The" before making the decision. A decision maker with good Tam The always will try to implement all the decision-making steps in detail to give best result. To group of decision makers, results of research also appointed that "Tam The" could direct the thinking of each member to a common axis. "Tam The" also could help to generate a synergy of knowledge and strengths of all members to create best performance in the decision-making process.

Tam The of Person Who Implements Decision

When the people who implement decision in practice have good "Tam The," they will actively participate and contribute to the implementation progress of decision to create real benefits for enterprises. Therefore, in TO-BE model part of the Made in Vietnam lean decision-making model, solutions for building and improving "Tam The" for "man" should be focused and prioritized. These solutions also need to be implemented before other solutions related to "Man," "Method," "Material," and "Machine."

3.4 Case Study Applying the Made in Vietnam Lean Decision-Making Model in Food and Beverage Service

Restaurant A is a take-away restaurant; it offers a variety of Vietnamese dishes. At the beginning, the restaurant's managers designed a delivery process to commit that a total delivery time of no more than 30 min for all customers within a 5 km radius (with the time starting from when the customer's order is received). After 6 months of operation, the restaurant A experienced problems with its delivery process. It received numerous complaints from the customers about long delivery time, delivery of wrong shipment, etc. In order to enhance customer satisfaction, restaurant A's managers need to make a decision to improve delivery performance to achieve initial commitment. They decided to employ the Made in Vietnam decision-making model in their decision-making processes. The Made in Vietnam decision-making model applied in the restaurant is presented in Figs. 22.5 and 22.6.

The made in Vietnam lean decision-making model applied in the restaurant is as follows:

Step 1: AS-IS model: current delivery process of restaurant A

After the time of operation, current total delivery time is 33% higher than the initial target (Table 22.5).

Step 2: Identifying wastes in the current delivery process based on the Made in Vietnam lean management (Table 22.6).

Step 3: Building alternative based on the made in Vietnam lean management (Table 22.7)

Both alternatives have been established based on the Made in Vietnam lean management philosophy. Each alternative has different advantages. For example,

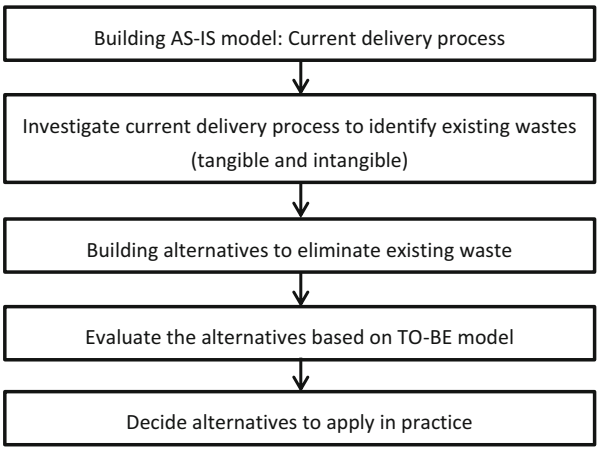

Fig. 22.5 Decision-making process based on the made in Vietnam lean decision-making model

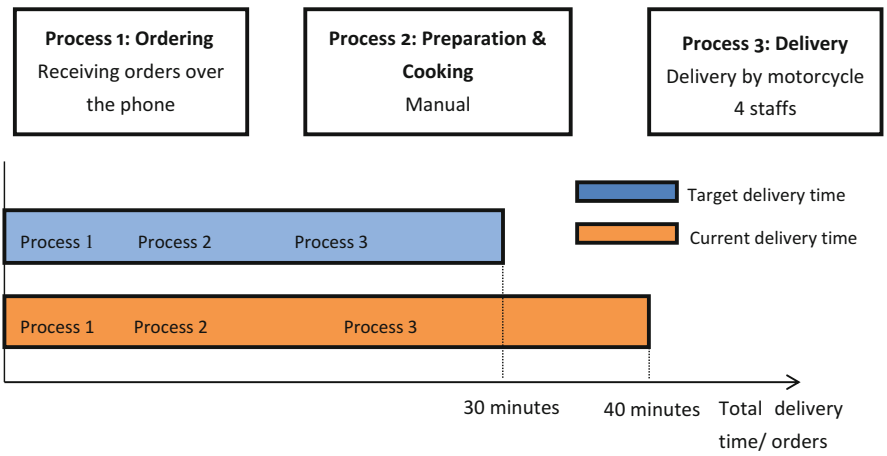

Fig. 22.6 Current delivery process situation of restaurant A

Table 22.5 AS-IS model

Man	Management skills of staff	Management skills of staff do not meet requirements
	Technical skills of staff	Technical skills of staff are not homogenous
Method	Management methods	Management methods are not applied
	Technical methods	Lack of standard operating procedure
"Tam The"	"Tam The" of staff	"Tam The" of staff are not homogenous
Machine		All work is done manually
Materials		High rate of broken materials

the alternative 1 will reduce labor cost, while the alternative 2 will save investment costs (Figs. 22.7 and 22.8).

Step 4: Evaluating the alternative based on TO-BE model (Table 22.8)

Table 22.6 Existing wastes in delivery process of Restaurant A

Tangible wastes	Intangible wastes
Incorrect order information	Does not optimize worker's productivity
Missing orders	The level of worker skills is not homogenous
Defects (poor quality)	
Wrong delivery of shipment	
Miscommunication between processes	

Table 22.7 Two alternatives for restaurant A

	Priority implementation	Alternative 1	Alternative 2
"Tam The"	1	Training "Tam The" for employees	Training "Tam The" for employees
Man	2	Decreasing one staff in process 1 and one staff in process 2	Increasing one staff in process 1 and two staff in process 2
Method	2	Standard process and visual management for kitchen process	Standard process and visual management for kitchen process
Machine	3	Deploy online ordering system Using extra automatic equipment to support worker in process 2	
Material	4	Changing supplier to perish product	Changing supplier for perish product

TO-BE model for each alternative

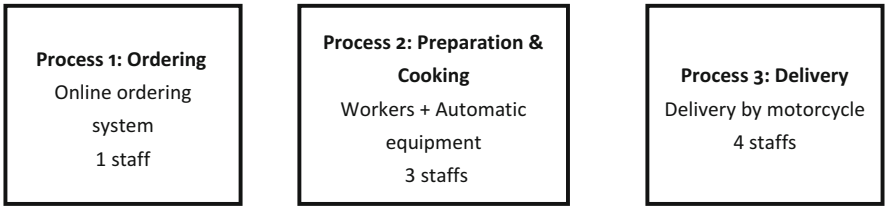

Fig. 22.7 TO-BE model for the alternative 1

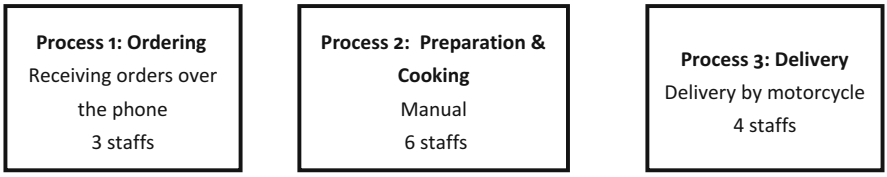

Fig. 22.8 TO-BE model for the alternative 2

Table 22.8 Summary changing cost and time of each alternative

	Alternative 1	Alternative 2
Investment cost	$200/month	
Labor cost	$1600/month	$2200/month
Defect cost	$120/month	$140/month
Time	10 days (for setup equipment, rebalance worker load and training)	5 days (for rebalance the worker load and training)

Table 22.9 Results of applying model in Restaurant A

Wastes	Average (%)
Reduced waste in human resources	30
Reduced waste in time	60
Reduced waste in information	45
Reduced waste in methods	45
Reduced waste in high failure rate	55

Source: Restaurant A

Step 5: Decide alternatives to apply in practices

Based on the result in steps 4, the total cost changing of Alternative 1 is $1920/month. Meanwhile, Alternative 2 is $2350/month that is more than 122% of Alternative 1. Defect cost of alternative 1 is lower than 10% of Alternative 1. However, alternative 1 takes 10 days to setup equipment and training worker, meanwhile alternative 2 takes only 5 days to training workers. After discussing, the Restaurant A manager decided to choose the Alternative 1, because Alternative 1 is more economic than Alternative 2. Then, they decide to focus on the on-time delivery factor by training both professional and "Tam The" for employee and investing in online delivery system and automatic equipment to support staff.

After applying the model, the before–after comparison was conducted by the involved managers. Using "Tam The" like filter helps the manager to make decision more correctly. Most interviewed managers in Restaurant A confirmed that the proposed model supported the decision-making process to be easier and to reduce the waste (Table 22.9).

4 Conclusion

The Made in Vietnam lean decision-making model has been recognized as a useful model for improving efficiency of decision-making process of Vietnamese enterprises. The model helps to reduce five types of wastes in the decision-making process. These wastes include waste in human resource; waste in time, waste in information, waste in method, and waste in high failure rate. Moreover, this research also confirms that "Tam The" is the most important factor of the made in Vietnam lean decision-making model. "Tam The" is not only important for the

decision-making process in Vietnamese enterprises but also important for other enterprises in both developing and developed countries.

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Chapter 23
Empirical Research on the Influence Factors of E-commerce Adoption Among E-commerce Companies in Vietnam

Duong Nguyen Huu Thi Thuy

Abstract This research examines the technological, organizational, and environmental factors that affect e-commerce adoption in Vietnam generally as well as B2B, B2C, and P2P model particularly. The TOE framework is implemented in order to investigate the degree of impact of these e-commerce adoption factors. This is a qualitative research, which uses the interview method to collect data. There are five participants from four companies in the interviews. After collecting data, 'template analysis' is used to analyse the effects of e-commerce adoption factors. The finding suggests that the companies should focus on the relative advantage, compatibility, complexity, trialability, top management support, size of company, strategic orientation, competitive environment, supplier and buyer pressure, and government support. Furthermore, these factors will affect different e-commerce models in different degrees. This research does not only provide a comprehensive picture of the e-commerce adoption in Vietnam market but also a deep insight view of the entire market and different e-commerce models.

Keywords E-commerce adoption · Technology–organization–environment (TOE) framework · Business model

1 Introduction

1.1 General Knowledge About E-Commerce in Vietnam

Since the implementation of 'Doi moi' policies which transform the economy from centrally planned economy to a market economy in 1986, the Vietnamese government tried to find ways of reducing the dependency of its economy on foreign

D. N. H. T. Thuy (✉)
Hanoi University, Hanoi, Vietnam

FPT University, Hanoi, Vietnam

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countries and developing domestic market to sustain economic growth (Le et al. 2012). It is a milestone of bringing businesses the freedom of trading and the diversification of various types of goods and business models. Hence, Vietnam market has various opportunities to open to worldwide market, especially in the globalization era.

In today's world of globalization, companies and Government of different nations interact and integrate with each other. It provides various expanding business opportunities for entrepreneurship all around the world. In recent years, globalization has been not driven by only financial market, international trade, and technological development but also soaring flows of data and information (McKinsey 2016). It means that in order to adapt with the trend of the market, entrepreneurship must transform digitally (Biggiero 2007). According to Hart (2010), there is a link between globalization and digitalization. In Vietnam, the digitization is not a new term. According to General Secretary Dao, digitization has an enormous potential in Vietnam market (Customnews 2018). However, only a limited number of enterprises have started to digitize their business. Besides, Kantar Worldpanel, a global expert in shoppers' behaviour, has researched that Vietnam is one of the world's fastest growing e-commerce countries (Vietnamnet 2017). In Vietnam, there are 35.4 million e-commerce users in Vietnam currently and it is forecasted to increase by 6.6 million in 2021 (Eshopworld 2018).

The digital gap between developing countries and the developed one is remaining which might create many challenges for enterprises in developing countries generally and Vietnam particularly in the process of going digitally and participated in the e-commerce market comparing with those in developed countries. First of all, companies in developing countries have been inhibited in quality, availability, and cost of accessing such infrastructure (Humphrey et al. 2003). Secondly, in developing countries, the e-commerce awareness is limited due to the low level of information and communication technology (Mollaa and Licker 2005). Moreover, the readiness of institutions in developing countries is lacking which is an essential factor for the trust of conducting business (Oxley and Yeung 2001). Last but not least, enterprises in developing countries are small, which means that they lack adequate resources to invest in IS and IT and absorb possible failure (Goode and Stevens 2000). As the benefit of e-commerce brings to the national economy, it is vital to research about Vietnam e-commerce to overcome these challenges.

This research aims to investigate the e-commerce adoption factors from the organizational point of view in technological, organizational, and environmental contexts in Vietnam. The focus will be on the practice of e-commerce companies in Vietnam.

1.2 Literature Review

1.2.1 E-commerce Literature Review

E-commerce has been a relative new concept, which was added to business vocabulary during the 1970s (Wigand and Rolf 1997). Hence, e-commerce comes up with

various definitions (Rahayu and Day 2016). However, most of them agree that it is the use of the Internet to process and conduct the business (Delone and McLean 2004). Electronic commerce refers to activities of trading goods and services through the Internet platform, or in other words, it includes all transactions referring to the transfer of the ownership of goods and services conducted through the computer-mediated network (Anjali 2014). Furthermore, Agliavini et al. (2001) define that any economics transaction on the online platform can be classified as e-commerce. It is argued that enterprises should be at the forefront in order to take the opportunities which are offered by the Internet and e-commerce market so that they can expand their business to the global market (Kaynak et al. 2005). Furthermore, e-commerce creates new channels for companies to exchange information with customers, suppliers, and so on, with its advancement of ICT and the development of social commerce (Hajli and Shanmugam 2014).

E-commerce brings various benefits to companies (Nanehkaran 2013; Hajli and Shanmugam 2014). Firstly, thanks to the development of e-commerce, company can conduct the selling activities at any time as all buying and selling are on the online platform (Nanehkaran 2013). Thus, enterprises can enhance their ordering capacity with deeper product selection (Adelaar et al. 2004). Secondly, it helps a company to reduce the cost as they spend lower cost while providing a better quality of service (Santarelli and D'Altri 2003). It is because e-commerce reduces market entry cost and distribution cost and increases the efficiency of marketing and promotion which helps to reach more customers (Kaynak et al. 2005; Santarelli and D'Altri 2003). Thirdly, they do not need to set up company physically, instead, the core operating system is on the Internet (Nanehkaran 2013). On the one hand, companies can be aware of the potential benefits as how it can improve the profit and increase market share. In order to participate in the e-commerce market, companies should upgrade their communication system in both intra-organizational and inter-organizational levels (Hajli and Shanmugam 2014). As adopting the e-commerce, enterprises should redesign the relationship with consumers and reengineer its business process (Daniel et al. 2002). On the other hand, large companies who have full access to updated technology including computers, Web browsers, and telecommunication links will take the competitive advantage of those in order to reduce the cost (Riquelme 2002).

1.2.2 E-commerce Adoption Researches in Developing Countries

Policy makers and researchers assent to others that e-commerce plays an important role in forming socio-economic progress in developing countries (Sahay and Avgerou 2002). However, there is a gap between developing and developed countries in terms of information technology, which might affect the adoptions of e-commerce in developing countries. The adoption process within enterprises and the potential of e-commerce are not fully understood (Drew 2003; Qureshi and York 2008). In the past, there have been various studies which investigated the factors influencing e-commerce adoptions, but they just mainly focus on developed

countries (Ahmad et al. 2014). Mollaa and Licker (2005) point out that the understanding of drivers affecting e-commerce adoption among businesses in developing countries is limited by the absence of rigorous research. Moreover, Teo and Ranganathan (2004) also argue that there is a lack of studies on e-commerce conducted in the Asia Pacific region. As 80% of the population in the world is living in developing countries which are rapidly adopting e-commerce to their businesses, it is essential to investigate the key factors of e-commerce adoption (Molla and Heeks 2007).

1.2.3 E-commerce in Vietnam

As stated in the previous part, Vietnam is a potential market for e-commerce to develop as it has several favourable conditions for e-commerce development. Firstly, Vietnam has a youthful population, which has the keenest users of mobile devices in the region (Reed 2018). According to Nielsen (2015), a market research company estimated that Vietnam is the third country having the highest online time among Asian countries, just behind Singapore and Philippines. They estimated that Vietnamese people spend about 24.7 h online per week. Specifically, according to Vietnam e-commerce and information technology agency [VEITA] report (2015), there were 32% Internet users who accessed Internet 5–7 h/day and 26% accessed 3–5 h/day. They also stated that there were 62% of Internet users shopping online (Nielsen 2015).

According to Mr. Anh, deputy director of Vietnam E-commerce and Information Technology Agency [Vecita] under the Ministry of Industry and Trade, Vietnam e-commerce market growth rate was 35% and was higher than Japan by 2.5 times (Vietnamnews 2016). It is believed to grow more significantly in the future because various telecommunications companies have invested heavily in the infrastructure system in order to boost the country's digital economy.

Although there are various types of e-commerce, e-commerce in Vietnam is categorized into three main types: B2C e-commerce, B2B (Luan 2015), and a new type of e-commerce P2P (Ecommerce iq n.d.). Firstly, B2C refers to business to customer, which uses the Internet as a retail market channel (Drigas and Leliopoulos 2013). Hence, based on the B2C marketplace, companies can sell goods and services directly to customers. Secondly, B2B marketplace refers to the business to business. On B2B marketplace, the transaction will be conducted among different enterprises in an online environment (Kumar and Raheja 2012). Both B2C and B2B e-commerce marketplaces follow traditional e-commerce when both buyers and sellers have to connect through an intermediary instead of directly (Ferreiral and Ferreira 2004).

Thirdly, P2P refers to peer-to-peer e-commerce. On P2P electronic e-commerce, peers or players can connect directly with other peers without any intermediaries (Ferreiral and Ferreira 2004). It means that both buyers and sellers have to advertise their demands by themselves on the platform in order to match with others. This

means that they also have to manage the risks of transactions without prior experience and knowledge about each other (Xiong and Liu 2003). Because of the lack of information and statistics, it is not determined which type of e-commerce is the key driver of e-commerce in Vietnam.

Vietnam is a fruitful market for e-commerce to develop, but it is still in the very early stage, which might have various challenges to players such as the high cash on delivery (COD) rates and lack of customer trust and logistic infrastructure (Van 2018). About the method of payment, according to a news article published by the Vietnamese news based on the comments made by an official from the Department of E-commerce and Information Technology, Vietnamese customers still prefer cash on delivery (Vietnamnews 2016).

The online payment methods which include e-wallets, card switching system, payment cards, Internet banking, mobile banking, and credit cards, according to the Vietnam E-commerce Report (2015), are accounted for a small part of total payment of e-commerce. The reason for the less preference of online payment was the lack of trust of customers on e-commerce market, said Mr. Phan from the Vietnam Competition Authority. Furthermore, while e-commerce market in Vietnam developed rapidly, the development of online payment was still at the infant stage, said Do Thang Hai—Deputy Minister of Industry and Trade (Vietnamnews 2016). Moreover, there is still a gap in the market for the high quality of logistics. It is because the logistic cost is high, which accounts for 18% of GDP in 2017, higher than other developed countries and higher than the world average of 14% (World Bank Country Director 2018). Additionally, there are various challenges to e-commerce players.

Vietnam has favourable conditions for e-commerce to develop. However, as stated above, there have been various barriers for enterprises to penetrate this market. Hence, it is extremely important to investigate e-commerce adoption in Vietnam in order to find the most significant factors which affect the implementation of e-commerce. Le and Filiatrault (2006) research stated that there are some factors that have an influence on the adoption of e-commerce in Vietnam depending on users or prospectors. They include the size of the enterprise, its resources and its strategic orientation, the employees' knowledge of e-commerce, the attitudes of managers towards innovation and their knowledge of the new technologies and of e-commerce, the intensity of the competition, the degree of support of the government, the national infrastructure, the perceived relative advantages, and the complexity and compatibility of e-commerce.

1.2.4 E-commerce Adoption Framework

With the review of related literature and by combining with the actual situation of e-commerce development in Vietnam, this research is mainly based on Technology–Organization–Environment (TOE) framework (Tornatzky and Fleischer 1990). This framework consists of Roger's diffusion of innovation because it focuses on both internal and external aspects of a company, also the technological aspect of key

drivers for new technology diffusion. Hossain and Quaddus (2011) present that the TOE framework is one of a few adoption frameworks, which approaches towards the socio-economic features. It recognizes the interplay of technology development, organizational condition, and organizational reconfiguration formed by industry environment. Moreover, this framework provides a comprehensive picture about adoption factors, user adoption process, and implementation; predicted challenges; post-adoption diffusion affected by technology; the development of organizational capacity in using technology (Wang et al. 2010; Salwani et al. 2009). There is a controversy about which is the most suitable size of the company to apply the TOE framework. On the one hand, some scholars confirm the usefulness of TOE model in constructing adoption predictors in large companies, which have the continuity of consumers and fewer complaints (Parker and Castlemen 2009; Awa et al. 2011). On the other hand, Kuan and Chau (2001) state that the TOE framework is very helpful in proposing a perception-based EDI adoption model in small companies.

The major snag with the TOE framework is that some of the constructs in the adoption predictors are assumed to apply more to large organizations, where clients are sure of continuity and less complaints, than to SMEs (Parker and Castlemen 2009; Awa et al. 2011).

The TOE framework classifies three characteristics of a company, which has impact on the process of adopting, implementing, and using technology innovation (Robertson 2005; Tornatzky and Fleischer 1990). The three characteristics are explained as follows (Robertson 2005; Tornatzky and Fleischer 1990):

Technological context: it will describe both new and existing technology in the firm. It considers the complexity, compatibility, advantage, ease of use, and so on, of technology related to the firm. For example, the number of computers in company and types of technology applied within the company will be taken into consideration as it determines the ability of company moving to e-commerce market and other technology initiatives.

Organizational context: the organizational context will refer to the measurement of an organization such as company scope, size, and managerial beliefs.

Environmental context: it refers to the way how a company operates its business in given external factors having an impact on the company such as government regulations and so on.

There has been a massive study on the use of the TOE framework, in which we can see that the factors belonging to technology, organization, and environment are used to research the IT adoption. In terms of technological context, relative advantage and complexity, compatibility, and IT infrastructure, technology readiness is mostly used to investigate technology within the company. In fact, relative advantage, compatibility, complexity, trialability, and observability are innovation factors of technology in innovation diffusion influencing the innovation adoption framework (Rogres 1995). From the findings of these studies, compatibility, technology readiness, and relative advantage have a positive relationship with e-commerce adoption (Lertwongsatien and Wongpinunwatana 2003; Zhu et al. 2003; Low et al. 2011; Ming and Woan 2008; Alshamaila et al. 2013). In terms of organizational context, top management support, firm size, and prior experience are key drivers for

innovation adoption (Lertwongsatien and Wongpinunwatana 2003; Zhu et al. 2003; Low et al. 2011; Ming and Woan 2008; Alshamaila et al. 2013). Last but not least, competitiveness and market scope are the common environmental factors and have great effect on the prediction of the innovative adoption (Lertwongsatien and Wongpinunwatana 2003; Zhu et al. 2003; Low et al. 2011; Ming and Woan 2008; Alshamaila et al. 2013).

There have been numerous studies about e-commerce adoption (Poorangi et al. 2013; Mohammed et al. 2013; Ghobakhloo et al. 2011; Grandon and Pearson 2004a, b; Chong and Pervan 2007; Luqman 2011; Saffu et al. 2012; Premkumar and Roberts 1999; Elmazi et al. 2011; Huy and Filiatrault 2006; Cohen and Kallirroi 2006; Jeon et al. 2006). By reviewing the literature review, it can be seen that although many studies do not follow the TOE framework, their factors investigated are all classified into three main categories: technology, organization, and environment.

Besides those factors, some barrier factors of the entire market such as cash on delivery (COD), customer trust, and the investment from foreign corporation factor which is mentioned in the previous part are examined as the important parts affecting e-commerce adoption in Vietnam. It is because they are the feature of Vietnam e-commerce market which can drive the development trend of the entire market. These factors and their effects will be determined throughout the interviews.

1.2.5 Gap Analysis

Although e-commerce adoption is an interesting topic, which attracts many researchers, there is still a gap in the literature. Firstly, e-commerce adoption has been investigated in many developed countries. Additionally, scholars have argued that research findings of one country might not be suitable for other countries (Dewan and Kraemer 2000). It means that the findings of e-commerce in developed countries might not be applicable in developing countries. Hence, there is a lack of empirical research about e-commerce market in developing countries. Secondly, it is undeniable that although there are many challenges for e-commerce companies in the market in developing countries, for instance, in Vietnam, it is still a fruitful market to exploit. However, there is only one academic research about e-commerce adoption in Vietnam market by Le and Filiatrault (2006). Hence, it is essential to investigate the e-commerce adoption in Vietnam. Thirdly, most of the research about e-commerce adoption use a quantitative method (Gefen and Straub 2000; Lertwongsatien and Wongpinunwatana 2003; Grandon and Pearson 2004a, b; Mollaa and Licker 2005; Seyal and Rahman 2003; Le and Filiatrault 2006), which has the purpose of finding the factors which have the most significant effect on the e-commerce adoption in the whole picture. However, this research aims to find the e-commerce adoption factors from the organizational perspective of e-commerce companies in Vietnam. Hence, qualitative methods, interview for more specific, will be employed in order to utilize the information in the interviews. Last but not least, there is no research which investigates the different successful adoption factors

among different types of e-commerce: B2B, B2C, and P2P. Hence, it is essential to examine and compare successful factors among these e-commerce categories.

In order to achieve the aim of this research, this study focuses on answering the following questions:

What are the significant Technological, Environmental, and Organizational factors that can lead to a successful e-commerce adoption among e-commerce companies from organizational point of view?

What are the Technological, Environmental, and Organizational differences among successful factors among three types of e-commerce: B2B, B2C. P2P

What are the other general factors that affect managers of enterprises in Vietnam in adopting e-commerce?

2 Research Method

The research interest focuses on e-commerce adoption in the context of technology, organization, and environment in Vietnam. An important goal of this research is to provide an understanding of e-commerce adoption factors in Vietnam. The main focus of this research is e-commerce companies in Vietnam. In order to seek the answers, the strategy of this research is based on data collection and hypothesis development. Thus, the data will be tested and analysed to find the result. Hence, the positivism is the suitable philosophy for this research. Additionally, deduction approach is employed in this research as the TOE framework is used to analyse the impacts of e-commerce factors. Furthermore, this research is designed as qualitative data as it focuses on the manager's deep insight view of each e-commerce category. Moreover, the sample in this research is supposed to be purposive because of the possibility of fully assessing to managers of each e-commerce company. Hence, the experiment strategy is employed. Moreover, in the framework of this research, it only investigates the opinion of managers in e-commerce company at the time of conducting the interview; it should be a cross-sectional research.

The literature has found many methodologies used in order to investigate the adoption in developing countries. In general, both qualitative and quantitative methods are used to examine the factors in e-commerce adoption. Specifically, the quantitative method includes a structured questionnaire and close-ended question, which can be very difficult to explore the e-commerce adoption and innovation as well (Bryman and Bell 2015). It is because e-commerce in Vietnam is still in the infant stage, and every development or activities of e-commerce are assumed to be innovative changes. It is important to use an in-depth approach to get more detail in this emerging market environment. Hence, this research will use qualitative data. The emphasis of this strategy is more on words rather than quantifiable data (Bryman and Bell 2015). This approach is considered to be more relevant as it allows in-depth exploration and examination of firm innovation. Additionally, the qualitative method, especially interview, which involves open-ended question can investigate the innovation in e-commerce adoption aspect more deeply (Silverman 2016). Moreover, due to the time limitation, conducting the interview will be quicker

than approaching a large number of enterprises by questionnaire. It is because the nature of companies in Vietnam is not open to talk about their resources and business as they are scared of losing their competitive advantage.

2.1 Sample Selection

Purposive sampling, which is a non-probability and the selected criteria are based on the goals of the research, is employed (Bryman and Bell 2015). The criteria of choosing interviewees are the managers of e-commerce websites in Vietnam who have knowledge about e-commerce and understand all resources of their company. As stated above, according to EcommerceIQ Asia, the e-commerce in Vietnam is divided into three main types: B2B, B2C, and P2P. The sample is chosen from the list of top e-commerce websites provided by Ecommerce iq (n.d.) and the list of top e-commerce websites provided by Iprice (2018). The characteristic of the companies in the list is that almost all of them have a large number of employees. It is because that there are some websites which are owned by Vietnamese big corporations such as VCCorp and FPT or belong to foreign corporations, namely Alibaba or Telenor International Telecommunication Group. Additionally, some of the companies go from offline to online and remain their business on both two channels; meanwhile, others just do their business totally online. Hence, their total employees are accounted for both staff working online and offline. There is a minority of companies in the list that has less than 10 employees. Currently, most e-commerce companies tend to expand their scope to others' model. It means that, they do not operate their business in only B2B, B2C, and C2C. In the framework of this study, two companies which are doing business in both B2B and B2C and two P2P companies will be chosen to conduct the interviews (Table 23.1).

By analysing the literature, it can be seen that scholars have used several variables to investigate the e-commerce adoption. There are still many conflicts about the results among them. In the framework of this research, the author will select variables which have been identified to be significant factors in previous researches. Firstly, the technological factors included are Relative advantage, compatibility, complexity, and trialability. Secondly, organizational factors included are top management support, Size of company, and Strategic orientation of the enterprise. Thirdly, environmental factors included are Competitive environment pressure,

Table 23.1 List of companies interviewed

Company	Type	Capital source	Offline channel	Interviewee
Company 1	B2B + B2C	Vietnam	Yes	Com1-B2C Com1-B2B
Company 2	B2B+B2C	China	No	Com2
Company 3	P2P	Norway	No	Com3
Company 4	P2P	Singapore	No	Com4

buyers/suppliers pressure, and government support. Additionally, other variables will be determined during the interview process.

2.2 Interview Process

A semi-structure interview will be carried out to discover the topic. During the interview, researchers can flexibly ask different questions based on how the interviewees respond.

The structure of the interview is as follows:

Interviewees describe the changes of Vietnam e-commerce market in recent years in Vietnam and their companies' position regarding the development of Vietnamese e-commerce market in the future.

Interviewees describe their understandings about e-commerce adoption of their companies in the context of Vietnamese e-commerce.

The Technological, Environmental, and Organizational factors that affect managers of enterprises.

The significant Technological, Environmental, and Organizational factors that can lead to a successful e-commerce adoption in Vietnam and among e-commerce companies.

Once the data were transcribed, a process called 'the Template analysis' (King 2012) is deployed to analyse based on the TOE framework.

3 Result and Discussion

3.1 Technological, Organizational, and Environmental Factors Affecting E-commerce Adoption

Generally, the results are quite consistent with previous studies that each specific factor in three categories—technology, organization, and environment—has an

Table 23.2 TOE factors of different kinds of e-commerce companies

Technological factors					Organizational factors			Environmental factors		
Company	Relative advantage	Compatibility	Complexity	Trialability	Top management support	Size	Strategic orientation	Competitive environment pressure	Buyers/ Suppliers pressure	Government support
Com1-B2B	No effect	No effect	No effect	No effect	M	M	M	H	L	L
Com2-B2B	No effect	No effect	No effect	No effect	M	M	M	M	L	H
Com1-B2C	M	H	H	L	M	H	M	H	L	L
Com2-B2C	M	H	H	L	M	M	H	M	L	H
Com3-P2P	M	H	H	L	H	L	M	H	L	L
Com4-P2P	L	H	H	L	M	L	H	H	L	L

effect on e-commerce companies (Poorangi et al. 2013; Ghobakhloo et al. 2011; Grandon and Pearson 2004a, b; Chong and Pervan 2007; Luqman 2011; Saffu et al. 2012; Mirchandani and Motwani 2001; Huy and Filiatrault 2006; Cohen and Kallirroi 2006). However, the impact level of each factor varies depending on different kinds of business models. Table 23.2 illustrates the level of effect on different kinds of e-commerce companies.

3.1.1 Technological Factors

From Table 23.2, it is clear to see that the technological factors do not have any impact on e-commerce adoption of the B2B model, which is totally different with the results of previous studies. In fact, technological factors are investigated as the insignificant factors on the B2B model in previous studies (Lip-Sam and Hock-Eam 2011; Cindy et al. 2005; Sila 2013). According to the results found in Chap. 5, in Vietnam, there is no ecosystem for the B2B model; due to the Vietnamese consumer habits, they will contact the wholesalers directly. Thus, e-commerce companies usually find their B2B customers and vendors through their network.

Unlike the results found for the B2B model, the results of B2C are quite similar with previous studies (Tom and Ngai 2006; AlGhamdi et al. 2013; Dubelaar et al. 2005; Ardura and Artola 2010). It shows that technological factors have a strong impact on e-commerce adoption. It is explained by all interviewees that their online market platform is the only place for them to approach customers and execute all transactions. Hence, technological support is an essential part to contribute to the success of the online platform. Relative advantage was determined to be the most important technological factor among others, according to the previous studies (Tom and Ngai 2006). However, it was found in this research that the effect of relative advantage is ranked behind the compatibility and complexity in Vietnam market. It is because Vietnam e-commerce companies want to provide a user-friendly system design for every consumer even those who are not familiar with using computers. The trialability is ranked as the low impact factor as all B2C companies mainly focus on the ease of use in their system. Hence, they have not tried too much effort for applying innovation to their business model.

P2P model is also affected by the compatibility and complexity most and trialability least, based on the results discussed in the previous chapter. Because they have the same purpose as the B2C model as they want to provide a user-friendly system for everyone. Especially, their target users can be everyone who want to sell and buy on online marketplace. However, there is a different effect of relative advantage on the two P2P model companies. The reason is that on the one hand, company 4 is a new player in the market. Their strategy is to attract the traffics to their website by supporting shipping fee, taking no commission from vendors and providing the most convenient system to users. On the other hand, company 3 is in a mature stage as they already have their market share and a certain amount of traffic. In recent years, they began upon focusing on applying innovative filters on their

website. Hence, the effect of relative advantage factor depends on the stage of development of that company and its strategy.

3.1.2 Organizational Factors

The effect of firm size is a controversy in previous studies. There are some studies that show that firm size plays an important role in B2B adoption (Sila 2013; Thatcher et al. 2002), while others state that it is insignificant (Cindy et al. 2005; Lip-Sam and Hock-Eam 2011). The results of this research interestingly show that firm size is not strongly significant or insignificant. Instead, it just has a medium effect on the B2B model. Top management factor also does not have a strong impact on this model as found in the result of previous studies (Sila 2013; Lip-Sam and Hock-Eam 2011; Thatcher et al. 2002). However, it was found to have a medium effect on the B2B model based on the result found in Chap. 5. It is explained by the interviewees that because B2B business mainly uses company network, the support of manager just has a certain impact on the adoption. The strategic orientation which is not mentioned much in previous studies about B2B model adoption also shows to have a medium impact on this model adoption with the same reason as top management support. To sum up, this model is mainly based on the network and sales are not usually disclosed publicly. Hence, it is hard to identify which factor should be focused more to adopt B2B model in Vietnam.

Additionally, like model B2B, top manager just has a medium level of effect. This factor is not also a consideration factor for the B2C model in previous studies. In fact, this model is affected by customer factor rather than top manager factor because if there are demands, the e-commerce companies will try to satisfy those demands (Com1, B2C). All interviewees agree that top management support does not affect much the development of the B2C model. The firm size is not also considered as an important factor in previous studies, but it plays an essential role in model B2C of company 1. As company 1 has its own logistic department, they can control the orders from the time of order placement to the time of arrival. Hence, they need a huge number of staff, especially in logistic department to operate their business. On the other hand, model B2C of company 2 outsources their logistics; hence, the firm size does not affect their business significantly as company 1. Hence, it just has a medium effect on the B2C model of company 2. The importance of strategic orientation stated in previous studies on the B2C model (Dubelaar et al. 2005) is also true for the B2C model in Vietnam. It has medium and high impact on company 1 and 2, respectively. To sum up, all organization factors have a degree of impact on the B2C model in Vietnam.

The result shows the low effect by firm size on the P2P model. It is because their main responsibility is to provide a marketplace for users to trade, which does not need a huge human resource. In fact, these P2P companies just have less than 200 staff throughout Vietnam. Furthermore, company 3 is affected strongly by top management support and medium by strategic orientation, which is opposite to company 4. The reason is that company 4 is a new player in Vietnam e-commerce

market; they are still in the process of identifying their market positioning and long-term development. Hence, the strategic orientation will drive the direction of e-commerce adoption in entire market. Top management effect is also important but not as important as strategic orientation. Company 3, on the other hand, is in mature stage. They have already defined their market positioning and target customers. Thus, their strategic orientation does not strongly affect their e-commerce adoption. Instead, they need the support from managers to create the space for creation and research on employee's own way. Hence, they can provide users more innovative and convenience products. It can be said that the effect of top management support and strategic orientation depend on the stage of development of the company.

3.1.3 Environmental Factors

It is interesting that the environmental effect does not depend on the type of business model, instead the company itself. Competitive environment pressure is the only factor that has a significant effect on all companies that participated in the interviews as it makes the market more vibrant. It had been investigated as an important factor in adopting e-commerce in previous studies (Huy and Filiatrault 2006; Cohen and Kallirroi 2006) (Table 23.3). Additionally, previous studies also suggest that buyers' and suppliers' pressure affect e-commerce adoption (Ghobakhloo et al. 2011; Al-Hudhaif and Alkubeyyer 2011; Saffu et al. 2012; Huy and Filiatrault 2006). However, this factor just has a low effect on e-commerce companies in Vietnam. It is explained that the e-commerce website is an effective sales channel of all vendors, so they are very cooperative with e-commerce companies to make several attractive deals for consumers. Furthermore, the government support factor only has effect on company 2 which has top managers from Western countries whose working style is different from Asian working style. It can lead to difficulty when they work with the Vietnamese government. The effect of government support factor on companies 1, 3, and 4 is low, which is opposite to the result of Al-Weshah and Al-Zubi (2012) and

Table 23.3 Environmental effect grouped by company

	Environmental factors		
Company	Competitive environment pressure	Buyers/Suppliers pressure	Government support
Com1-B2B	H	L	L
Com1-B2C	H	L	L
Com2-B2B	M	L	H
Com2-B2C	M	L	H
Com3-P2P	H	L	L
Com4-P2P	H	L	L

Ifinedo (2011). They explain that the government just provides the policies and guideline for e-commerce market. Sometimes, these policies and guidelines limit their ability of releasing 'hot deal' to consumers.

3.2 Other Factors Affecting E-commerce Adoption in Vietnam Market

Besides the above factors, there are some other feature factors of Vietnam e-commerce market, which strongly drive the development of entire market. The importance of these factors is emphasized by all interviewees. Firstly, as stated in literature review part, the total time spent online by Vietnamese people is very high. It changes the shopping habit and the demand of customer on e-commerce market which are the fundamental factors motivating the development of e-commerce in early stage. They do not only drive the way of e-commerce operation but also the products offered on online marketplace.

Secondly, as also mentioned in literature review, the habit of using bank card is the challenge of adopting e-commerce. Hence, e-commerce companies have to provide cash on delivery service (COD), which requires a huge resource. This is also a typical characteristic of e-commerce market in developing countries like Vietnam. It is because the banking system has not been developed (Com3). Every transaction made by banking card cost an extra fee which discourages the online payment. Furthermore, online banking system has not gained the trust from Vietnamese consumers yet (Com2). Thus, they prefer COD more than other type of payment.

Thirdly, there has been a huge investment from foreign companies to e-commerce market in Vietnam. Hence, the invested company can take advantage of the latest technology and have more chances to develop (Com2). Moreover, they can support their users' business such as free shipping fee, free advertising fee, and commission fee. (Com4).

Fourth, the new model P2P has been emerged, which drives e-commerce market into different way from the past. In the past, the suppliers on online market must have business licences. However, on P2P marketplace, everyone can be a vendor. It might make the e-commerce more exciting and vibrant but also more complicated in the quality assurance of goods. Hence, P2P companies have to implement many policies, guidelines, and also innovative filters to match the demands and supplies on their website and also reduce the number of bad vendors (Com3, Com4). There are some other supportive factors which contribute to the process of adopting e-commerce such as personality of CEO, employees' knowledge of e-commerce which creates the appropriate spirit, effect, and efficient working styles.

3.3 The Contribution of This Study

This study has both academic and practical contribution. Firstly, this research is the second research investigating the Vietnam e-commerce market. Unlike the previous study which just gives the relationship between the market and adoption factors, this study uses a method to give deep insight view about the entire market and its adopting factors by using a qualitative research method. Furthermore, it also examines how these factors affect different kinds of e-commerce models in Vietnam. It is the motivation for further studies to examine the adoption factors of each e-commerce model in depth. Secondly, this study provides both general and particular views about the market for managers in e-commerce companies in Vietnam. Based on the result of this study, managers will know which are the e-commerce adoption factors in Vietnam market and which are the successful adoption factors for their business model. They can have some adjustments in their company's short-term and long-term plans in order to make the company's success.

4 Conclusion

In conclusion, regarding the research question of this research to find the technological, organizational, and technological factors affecting e-commerce adoption in Vietnam, the results and discussion suggest that companies should focus on the following factors based on the type of business model implementation: the relative advantage, compatibility, complexity trialability, top management support, size of company, strategic orientation, competitive environment, supplier and buyer pressure, and government support.

Depending on the type of model, these factors will have different levels of impact on the company. There are some differences among successful factors among the three business models in Vietnam. Firstly, the technological factors do not have any impact on the B2B model because e-commerce companies in Vietnam will use their network to approach their vendors and consumers in the B2B model. On the other hand, technological factors have a strong impact on both B2C and P2P models. Compatibility and complexity were found to have the most significant effect on these models, followed by relative advantage. Additionally, trialability has the lowest effect on all models. Secondly, organizational factors are very important in which top management support and strategic orientation are ranked having a medium-to-high effect on each model. Besides, company size level effect will depend on how the company operates the business and offers logistic services to consumers. Thirdly, it is interesting that the environmental factors do not affect e-commerce companies by their model, instead the effect is on the company itself. The competitive environment pressure factor has the most impact on e-commerce companies. In contrast, buyers' and suppliers' pressure has the lowest effect. Additionally, the government support was found to have a low impact on the company which has top managers

from Asian countries. However, it was found that this factor has a high impact on companies which have top managers from Western countries.

Additionally, the P2P model should create more policies, guidelines, attractive events, and innovative filters in order to balance their demands and supplies on their website and reduce bad vendors. Furthermore, the B2C model should be based on their strategy in order to define the appropriate factors which should be focused on. Last but not least, there are also some other supportive factors which should be focused on such as the CEO personality and employees' knowledge of e-commerce.

5 Outlook For Future Research

The first limitation of this research is the concerning about the comparative analysis of opinion from interviewees with different background in e-commerce sector. Hence, the result from interviewees with different backgrounds will be biased towards their background. It opens the opportunities for further research which investigate one specific area of e-commerce sector, involving the interviewees in the same background. It can provide in-depth insight on specific areas in e-commerce sector. However, due to the limitation of network to e-commerce company to invite interviewees and the limitation of literature of e-commerce adoption factor in Vietnam, this research significantly provides a general view about e-commerce adoption factors and the impact level of these factors on different kinds of e-commerce models.

Further study on this new phenomenon and its conditions for successful implementation is encouraged.

Regardless of the limitations highlighted and areas for future research identified, this research conducted here represents an important step in researching this topic in a developing economy context. As such, it offers new insights into an area of growing interest to research globally.

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Chapter 24
Antecedents of Social Media Adoption: A Case Study of Individual Online Retailers in Hanoi and Ho Chi Minh City

Thi-Minh Ngoc Luu, Phuong Mai Nguyen, and Phu Quy Dao

Abstract This paper empirically examines the antecedents of social media adoption as a business platform by individual retailers in the two biggest cities of Vietnam: Hanoi and Ho Chi Minh City. The conceptual framework for this study is based on the literature on information technology, e-commerce, technology acceptance model (TAM), and retailing. An online questionnaire survey of 512 individuals, who are currently selling products and services through social media sites, was administered in Hanoi and Ho Chi Minh City. The results of data analysis showed that perceived ease of use (PEU) has a higher impact than that of perceived usefulness (PU) on social media adoption of individual online retailers.

Keywords Social media adoption · Technology acceptance model · Online retailers

1 Introduction

Social media or social networking has emerged in these recent years as a new information channel through mass interaction among users. In business, social media have a significant impact on marketing and customer relationship management by supplying customers with information about sellers, products, or services and enabling real-time interaction between sellers and buyers. In recent years, social media have grown immensely popular among individuals, as businesses have started to see the benefits and the full visibility that comes with using social media (Siamagka et al. 2015).

T.-M. N. Luu · P. Q. Dao
University of Economics and Business, Vietnam National University Hanoi, Hanoi, Vietnam

P. M. Nguyen (✉)
International School, Vietnam National University Hanoi, Hanoi, Vietnam
e-mail: mainp@vnu.edu.vn

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In Vietnam, social media have dramatically spread out during recent years, particularly in the retailing sector. Due to the increasing use of information technology (IT) applications, the Vietnamese retailing sector is changing rapidly from the traditional brick-and-mortar business model to an internet-based one. Online retailers are becoming more popular than ever before with the entrance of numerous individuals. These retailers have turned nearly one-third of the population, i.e., 30 million people, into online shoppers (Vietnam E-Commerce Association 2019). More importantly, 48% of Vietnamese consumers are changing from brick-and-mortar retail stores and bazaars to online retailers to buy not only common goods but also luxury ones (Vietnam E-commerce Association 2019). According to a report by Vietnam E-commerce Association (2019), 36% of surveyed companies in research about e-commerce in Vietnam responded that they were fully aware of online shopping trends and currently implementing social media as a platform in the business. Consequently, e-commerce has boosted rapidly. The total revenue of e-commerce in Vietnam is shooting to 8 billion USD in 2018, representing a 30% increase compared to 2017 and a double increase than that in 2015 (Vietnam E-Commerce Association 2019).

Regarding the business-to-business (B2B) e-commerce, the rate of online orders for companies has increased quickly. In 2018, 49% of the surveyed companies received orders through social network sites. Moreover, 45% of e-commerce companies highly appreciated the efficiency of selling products through social networks, while this figure was only 39% in 2017 (Vietnam E-commerce Association 2019). Besides the B2B segment of the retail sector, e-commerce also led to the evolvement of B2C and C2C segments. By the end of 2018, the Vietnam E-commerce Association reported 49.8 million online shoppers in Vietnam (Vietnam E-Commerce Association 2019). Online retailing in Vietnam becomes extremely attractive to not only individuals and small-and-medium-sized enterprises (SMEs) but also the big ones. The traditional household retailers, e.g., mother-and-pop stores and bazaars, started to recognize fierce competition from online rivals when social media are becoming more and more popular. The disruptive effects of social media are placing pressure on Vietnamese retailers to adopt or be left behind. There is little empirical research, however, regarding how social media are used and experienced by adopting organizations, particularly retailers in an emerging country like Vietnam. This paper, therefore, aims to explore and explain factors influencing the social media adoption of individual online retailers in the Vietnamese context to discuss practical implications.

The rest of this paper is organized as follows. Section 2 provides the conceptual background of retailing, social media adoption, and the Technology Acceptance Model (TAM. The conceptual model and hypothesis development based on the TAM are briefly proposed in Sect. 3. Section 4 mentions the measurement instruments and sampling method. The findings of our empirical study are presented in Sect. 5 with the implications for practices. Finally, the limitations of our work are listed, followed by suggestions for future research.

2 Conceptual Background and Hypothesis Development

2.1 Retailing

Retailing is a set of business activities that add value to the products and services sold to customers by linking the manufacturers to consumers. Two distinct models of retailing are the brick-and-mortar model, so-called the traditional one, and the Internet (Enders and Jelassi 2000). The traditional model is mainly based on a physical store where the vendors interact face to face with the customers. While the online model allows the customer to access online information about the products, place an order, make the payment, and in case of digital products, e.g., software, music, and video, have them delivered instantaneously through the Internet (Enders and Jelassi 2000). The traditional retailing model is profoundly affected by widespread Internet usage since online retailers or e-retailers are achieving higher economies of scale in serving a few hundred thousand or even millions of customers. Moreover, the physical infrastructure absence makes the e-tailing business model highly scalable (Enders and Jelassi 2000).

As the new generation of Internet and social network savvy consumers emerge, it could be assumed that they will be much more inclined to make their purchase through the Internet and social media channel than today's consumers, who are accustomed to shopping at physical stores (Enders and Jelassi 2000). Thus, the e-tailing model is obvious to have much room for growth in the future.

2.2 Social Media Adoption in Business

Social media are described as a modern class of information technologies that facilitate collaboration and interpersonal communication through the use of Internet-based platforms (Kane et al. 2014). Social media simultaneously support one-on-one and mass communications (Vorvoreanu et al. 2013). The most popular social media tools are Facebook, Twitter, YouTube, and LinkedIn (Kane et al. 2014). The term social media has been applied to a range of technologies, including blogs, virtual worlds, and wikis, which facilitate the creation and exchange of information and build on the Web 2.0 foundation (Akrimi and Khemakhem 2012; Kaplan and Haenlein 2010).

Despite the heavy use of these social media tools by millions of people around the globe, their application for business is still in the embryonic stages (Kane et al. 2014). Businesses have started to use social media as an effective sales, marketing, and communications tool (Veldeman et al. 2015). In the retailing industry, not only big companies but also individual retailers are widely using social media to attract customers and communicate with them. Social media allow retailers to communicate economically and promptly to consumers (Tripopsakul 2018). An increasing number of researchers agree that social media adoption can significantly benefit

organizations. Scholarly researchers have indicated that social media have a more significant positive effect on attitudes toward brands and on purchase intentions of consumers than more traditional media (Colliander and Dahlen 2011). Social media adoption spans industries from manufacturing to healthcare, education, and banking. Mitic and Kapoulas (2012) argued that the banking sector is quickly adopting social media tools for marketing and relationship banking. Chikandiwa et al. (2013) investigated the adoption rate of social media by South African banks.

2.3 Technology Acceptance Model

Technology acceptance model (TAM) is the first and foremost traditional adoption theory in the field of IT (Awa et al. 2015; Benbasat and Barki 2007). It provides a basis for unveiling the impacts of external variables on adoption decisions with its basic postulates resting firmly on economic, utilitarian, and attitudinal grounds. In the TAM model, the perceived usefulness (PU) and perceived ease of use (PEU) are two primary components that determine the intention and actual adoption of a particular technology-based application.

The TAM model was also used to study a variety of Internet technologies, such as intranet (Alam and Noor 2009), mobile commerce (Yang 2005), or electronic commerce adoption (Alam et al. 2011; Lee et al. 2001; Olson and Boyer 2003), because it was initially developed to study computer-based technologies (Yang 2005), personal computing (Anderson and Gerbing 1988), and some other software (Venkatesh and Davis 2000).

2.4 Research Model and Hypothesis Development

This study uses the TAM model to explore factors affecting the adoption of social media in businesses of individual online retailers. The research model is presented in Fig. 24.1.

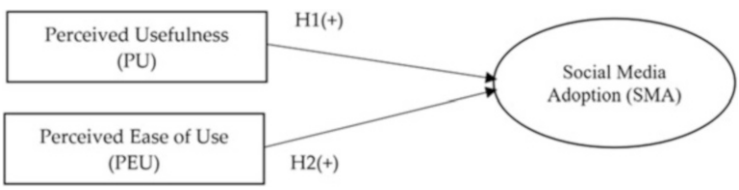

Fig. 24.1 Research model

2.4.1 Perceived Usefulness

Perceived usefulness (PU) defines a prospective user's subjective probability that using a specific application improves operations (Davis 1989). It provides diagnostic lenses into how actual use and intention to use are influenced. Previous research has investigated the link between perceived usefulness and the adoption of technology-based applications (Abed et al. 2015; Tripopsakul 2018; Heller Baird and Parasnis 2011). Similarly, we also put the hypothesis to test the positive relationship between perceived usefulness and social media adoption in the context of the Vietnamese retailing industry as follows.

Hypothesis 1: Perceived usefulness has a positive impact on the social media adoption as a business platform of individual online retailers in Vietnam.

2.4.2 Perceived Ease of Use

Perceived ease of use (PEU) measures the prospective user's assessment of the mental efforts required of the use of the target applications (Davis 1989). Empirical findings confirm the positive relationships between ease of use and attitude toward use (Venkatesh and Davis 2000) and show that PEU is a crucial proven determinant of users' intention to adopt IT (Venkatesh and Davis 2000), e-commerce and social commerce (Alam et al. 2011), and social media (Tripopsakul 2018). Thus, in this study, the hypothesis about the positive relationship between perceived ease of use and social media adoption in the retailing industry is raised in the new context of an emerging country like Vietnam.

Hypothesis 2: Perceived ease of use has a positive impact on the social media adoption as a business platform of individual online retailers in Vietnam.

3 Methodology

3.1 Measurement

The measurement instruments of this study were adopted from the literature on e-commerce and social media adoption. The scale of social media adoption (SMA) was adopted from the study of Ramdani et al. (2013), measured by four items. Meanwhile, the perceived usefulness (PU) scale with five items and perceived ease of use (PEU) scale with three items were adapted from the TAM model of Davis (1989) and slightly changed to be more suitable for this study.

For each questionnaire item, respondents were asked to show their viewpoint about the factors influencing social media adoption as a business platform on a five-point Likert scale, from 1 = "strongly disagree" to 5 = "strongly agree."

3.2 Sampling

The respondents were selected based on two controlling criteria, which are the age and revenue of the retailers. The estimated sample size was 600. An online Google Form format of the questionnaire was not only sent through email but also posted on the Facebook account of research team members and sent through Viber and Zalo applications to people on the list.

The research team committed that all responses were kept confidential to guarantee the objectivity of data. Respondents were not requested to provide their name, phone number, and email in the questionnaire. We anonymize the data before running the analysis. The authors also comply with the ethics in research by declaring not to provide the demographic information of respondents to any other parties. The survey data were only used for the research purpose of this study.

After 2 months, we reached the expected sample size of 600. Five hundred twelve valid responses were used for analysis, while 88 responses were removed due to missing information.

Regarding the revenue per month of online retailers, 96 respondents reported the revenue of 100 million VND (18.75% of the sample), 215 individuals from 100 to 200 million VND (41.99%), 89 individuals from 200 to 300 million VND (17.38%), and 112 retailers above 300 million VND (21.87%). The age distribution of the survey respondents is 16.99% (87 persons) from 18 to 22 years old, 41.40% (212 persons) from 23 to 31, 31.83% (163 persons) from 32 to 38, and 9.76% (50 persons) over 38.

3.3 Data Analysis Strategy

Confirmatory factor analysis (CFA) was run to test the presumed model on the basis of conventional fit indices, i.e., Chi-square [$\chi 2$], Chi-square/df [$\chi 2/df$], Goodness-of-fit index [GFI], incremental fit index [IFI], Tucker–Lewis index [TLI], Comparative fit index [CFI], and Root-mean-square error of approximation [RMSEA] using AMOS-22. Structural equation modeling (SEM) was run to test hypotheses on the relationship among the variables in the research model.

4 Results

4.1 Reliability and Correlation Analysis

Table 24.1 shows that the three measurement scales met the requirements of reliability with Cronbach alpha higher than 0.7 and the total variance extracted higher than 40%. Besides, Table 24.1 shows that all variables were positively

Table 24.1 Reliability and correlation analysis results

$N = 512$	Cronbach alpha	TVE (%)	Mean	SD	1	2	3	4	5
1. Age			2.39	0.910	1				
2. Revenue			1.46	0.499	0.215[a]	1			
3. Social_Media_Adoption	0.913	44.91	2.37	0.835	0.281[a]	0.216[a]	1		
4. Perceived_Usefulness	0.842	57.14	2.38	0.920	0.262[a]	0.200[a]	0.469[a]	1	
5. Perceived_Ease_of_Use	0.886	64.59	3.67	0.722	0.297[a]	0.211[a]	0.451[a]	0.577[a]	1

[a]Correlation is significant at the 0.01 level (2-tailed)

correlated with the remaining variables as the correlation coefficients range from 0.216 to 0.577. Thus, the measurement model satisfied the conditions for the model fit test in the next step.

4.2 Convergent and Discriminant Validity Test

The test of the measurement model includes the estimation of internal consistency, the convergent, and the discrimination validity of the instrument items. First, we conduct confirmatory factor analysis (CFA) of the three constructs, employing 12 items in order to assess the unidimensionality of each new construct (Anderson and Gerbing 1988). The measurement model provides a reasonable fit to the data (χ^2 = 110.742; Cmin/df = 2.171, IFI = 0.983, GFI = 0.964, AGFI = 0.945, NFI = 0.970. TLI = 0.978, CFI = 0.983, RMSEA = 0.048, RMR = 0.026). The test results are shown in Fig. 24.2 below.

In this study, we used the composite reliability index of (Bagozzi and Yi 1988) and the average variance extracted of (Fornell and Larcker 1981) to evaluate the reliability of the measurement scales. Table 24.2 shows that both of the indexes are higher than the cutoff values (CR > 0.60; AVE > 0.50). Moreover, CFA results of three constructs also indicated that all items had large and significant loadings on their corresponding factor, which provided evidence of convergent validity (Bagozzi and Yi 1988).

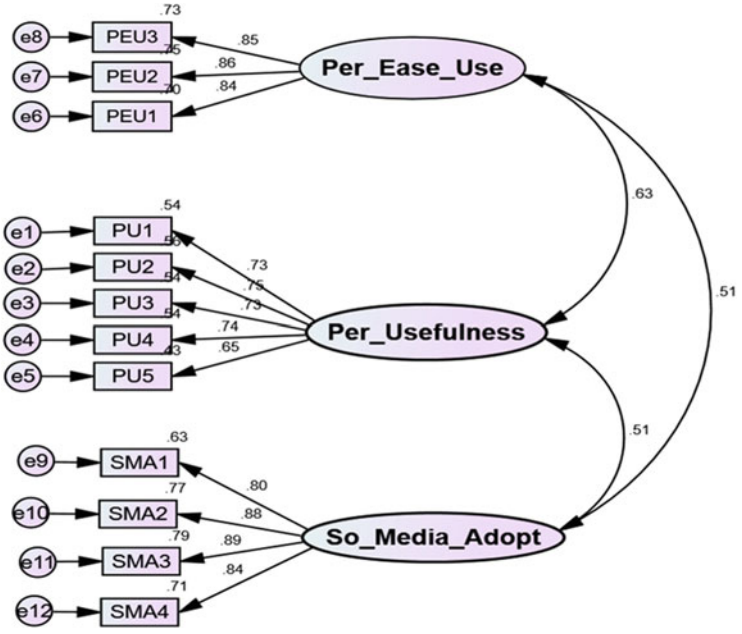

Fig. 24.2 Confirmatory factor analysis results

Table 24.2 Construct reliability and convergent validity

Items	Standardized loading	Reliability (CR, AVE)	Items	Standardized loading	Reliability (CR, AVE)
Social media adoption		Perceived ease of use			
SMA1	0.796	CR = 0.913 AVE = 0.725	PEU1	0.874	CR = 0.887 AVE = 0.724
SMA2	0.878		PEU2	0.883	
SMA3	0.888		PEU3	0.87	
SMA4	0.841				
Perceived usefulness					
PU1	0.733	CR = 0.844 AVE = 0.520	Note: CR: Composite reliability AVE: Average variance extracted		
PU2	0.748				
PU3	0.732				
PU4	0.737				
PU5	0.653				

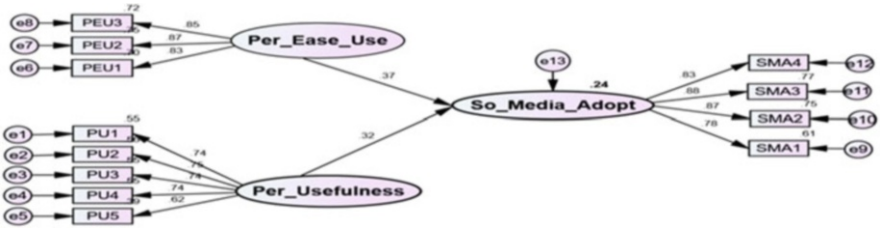

Fig. 24.3 SEM analysis results

Table 24.3 Structural equation modeling results

				Estimate β	S.E.	C.R.	*P*	Result
H1	So_Media_Adopt	←	Per_Ease_Use	0.368	0.041	7.758	***	Supported
H2	So_Media_Adopt	←	Per_Usefulness	0.324	0.051	6.662	***	Supported

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

4.3 Hypothesis Test Results

Results shown in Fig. 24.3 indicated that the Chi-square/degree of freedom ratio statistic ($\chi^2/df = 2.571 < 3$) and p-value ($p = 0.051 > 0.05$) well-achieved the model fit requirements in the model. Other indexes also satisfied the requirements such as IFI = 0.934, GFI = 0.924, AGFI = 0.886, NFI = 0.921. TLI = 0.916, CFI = 0.934, RMSEA = 0.035, and RMR = 0.016, proving that the model had a good fit.

The detailed results of SEM analysis are presented in Table 24.3.

Hypothesis test showed that perceived ease of use (PEU) has a positive impact on social media adoption as a business platform ($\beta 1 = 0.368$, se = 0.041, $p = 0.000 < 0.05$). Hypothesis 1 is accepted. It means that the more ease of use is perceived, the more willing to adopt social media the retailers are.

It is also critical to explore how the perceived usefulness affects the decision to adopt social media as a business platform. Table 24.3 shows that perceived usefulness has the positive impact on social media adoption ($\beta 2 = 0.324$, se $= 0.051$, $p = 0.000 < 0.05$). Therefore, hypothesis 2 was accepted. Furthermore, it is noteworthy in this study that the impact of perceived ease of use is slightly higher than that of the perceived usefulness on social media adoption.

In the context of globalization and technology change, the application of technology in business has shifted the traditional business model to the e-business model. The rising trend of purchasing on social networks and the emergence of e-commerce are bringing threats to traditional retailers. Social media content community sites are among the most visited on the web, and they attract millions of visitors from around the world (Fan and Gordon 2014). It is estimated that 73% of adult Internet users spend more than 20% of their time on social media, and firms are benefitting from utilizing and monitoring these social media platforms (Fan and Gordon 2014). Thus, retailers need to raise their awareness of social networks and e-commerce to improve their competitiveness.

5 Implications, Limitations, and Suggestions for Future Research

5.1 Implications

In terms of theoretical implications, this study contributes to the existing literature on TAM application in various fields of study by providing evidence from a developing country like Vietnam. The measurement scales of perceived ease of use, perceived usefulness, and social media adoption used in other studies in developed countries are tested and confirmed the validity and reliability in a new context of Vietnam. Thus, this study implies that comparative studies on the topic of social media adoption in business can use a comprehensive measurement instrument. This finding is critical when there is a lack of measurements for the studies of TAM, e-commerce, and social media adoption in developing countries. Regarding the practical implications, this study provides evidence to confirm the positive impact of perceived ease of use and perceived usefulness in the Vietnamese context. Thus, the research model in this study can be expanded in other studies, particularly in emerging countries like Vietnam.

It is known that Vietnam is a developing country with one of the fastest-growing retailing industry in the world. According to the Vietnam Retailing and Advertising Forum 2019, the rate of modern retailing in Vietnam is 25% which is rather low compared to the equivalent figure of other countries in the region such as the Philippines (33%), Thailand (34%), Malaysia (60%), and Singapore (90%). However, Vietnam is believed to be a very potential market with a growth rate of 30% in 2018 and a projected revenue of 13 billion USD in 2020 (Vietnam E-Commerce

Association 2019). Therefore, it is a must for the individual retailers to have a better knowledge of the perceived ease of use and perceived usefulness of the social media and social networks on their business. Changing awareness helps the individual retailers to select and use social network as a tool and a platform to improve their business performance.

5.2 Limitations and Suggestions for Future Research

The first limitation of this study is that it focuses on Facebook retailers, excluding other social networks. Therefore, there may be potentially biased findings. Future work should be expanded to other social network retailers.

Moreover, this study is conducted in a relatively short time, and the sampling method is mainly based on the personal network of the research team members. Consequently, the responses may be biased, as the respondents are affected by different factors.

Most of the respondents are young people of the age under 38, who are very familiar with the Internet and regularly selling and purchasing online. Furthermore, the survey was conducted only in Hanoi and Ho Chi Minh City using the snowball sampling method so that the biased sample is a critical issue of this study. Hanoi and Ho Chi Minh cities are two busiest markets and highest in Vietnam, so the findings of this study may be more favorable than the actual situation.

Lastly, this study focuses only on the impact of perceived usefulness and perceived ease of use of individual retailers while more factors, actually, also affect the social media adoption as a business platform such as security, business environment, technology context, and personal competency of retailers. Therefore, future work may pay more attention to other factors that may have an effect on social media adoption.

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Chapter 25
Contribution of Industry to Labor Productivity Growth in Vietnam

Nguyen Thi Dong, Nguyen Thanh Trong, and Dinh Thi My Hanh

Abstract In Vietnam after 30 years of the renewal process, due to a number of factors, especially the industrial sector, the growth of labor productivity has been increased significantly. By using shift-share analysis method to intra-industry between 1996 and 2017, which focused on internal industry, the result showed that both intra-effect and static shift effect made a great contribution to the labor productivity growth of the economy, and the contribution of static effect tends to increase. This means that the movement of labor from inefficient sectors to the more efficient sectors has had a positive impact on the overall productivity growth rate. Therefore, in order to promote productivity growth in the economy, Vietnam has to implement solutions in terms of reallocating resources, transforming the economic structure, applications of technology, and training human resources.

Keywords Industry structure · Labor productivity · Shift-share analysis

1 Introduction

Industry is the basic material manufacture sector and is considered the area that plays the leading role of most economies in the early stages of development, including Vietnam. This industry has always been at the forefront of innovation and the application of modern technology. Meanwhile, technological progress is one of the factors that strongly affect the process of restructuring the economic sector. Typically, industries that respond quickly to advanced technology will generate higher marginal productivity and therefore attract more labor and capital. This

N. T. Dong (✉) · N. T. Trong
University of Economics and Law–VNU-HCM, Ho Chi Minh City, Vietnam
e-mail: dongnt@uel.edu.vn

D. T. M. Hanh
Banking Academy, Phu Yen, Vietnam

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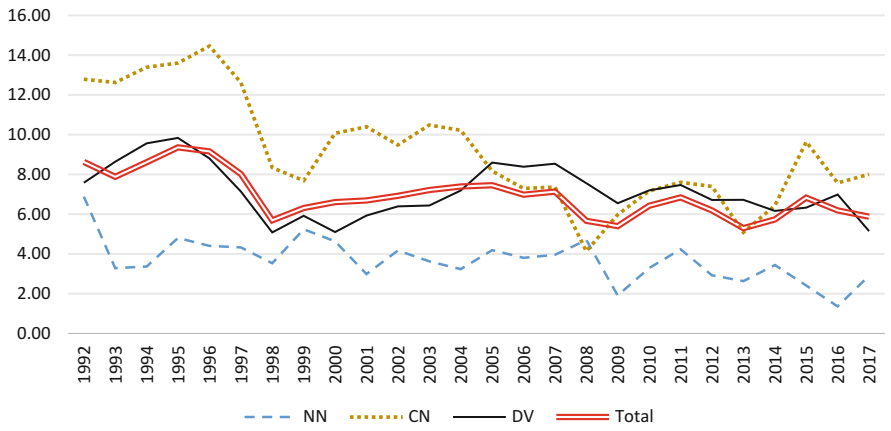

Fig. 25.1 Growth rate of economic sector

helps the economy grow rapidly. In Vietnam, the average annual growth rate of the industry in the period of 1991–2017 is often higher than the general growth rate of the economy (Fig. 25.1), so the contribution of industry in GDP increased rapidly from 23.2% in 1992 to the highest at 40.1% in 2004, it fluctuated over 37% for the following years of this period (GSO Vietnam 2018). The growth at this stage helps the industrial sector move from the secondary position to the crucial position in economic structure.

Besides the advantage of high labor productivity, the industrial sector also proves its leading role through the increasing contribution of the industry's GDP to the economy. In other words, the role of agriculture is limited to providing essential products that meet fundamental human needs, so the demand for this product will not increase as fast as the growth rate of income. In contrast, industrial products are often diverse and abundant. They can capture and guide people's consumption demand when their income rises. In a multinational empirical study about the relationship between economic structure and income in three decades of industrialization, Syrquin and Chenery (1989) forecasted the change of economic structure when income changes according to seven different levels. Accordingly, for countries with per capita income below $300, the value of agricultural products often accounts for about 48% of GDP and the value of industrial products accounts for 21% GDP. When the income increases to $300 per person, then the value of agricultural output decreases to 39% and the value of industrial output increases to 29% of total GDP. At the income level of $500 per person, the proportion of agriculture and industry is similar. At a per capita income of $4,000, agriculture accounts for 9.7% of the country's GDP. Above this income threshold, agricultural GDP is only 7% while industrial GDP is 46%.

Besides, along with the development of industrial goods is the formation of a link between industry and other sectors. This will create an effective chain effect that makes the economy grow, because as a means of production materials, industrial

products not only meet the demand for consumption, but also meet the demand for production. By providing modern machinery, transportation, and storage facilities in agriculture, industry has contributed to increasing labor productivity and the value of products for the agricultural sector. At the same time, with the cooperation of the processing industry, agriculture no longer worries about post-harvest issues, so it has more development opportunities to meet the huge input demand for this industry.

Thus, the industrial sector has inherent advantages, such as modern technology; income elasticity of demand is strong; the external impact of inter-industry links is very positive. These have made the scale and speed of the industry grow faster than other areas. Therefore, of course, this area will be one of the important factors that help the economy to improve labor productivity and grow rapidly in the early stages of industrialization and modernization.

2 Methodology

2.1 Using Shift-Share Analysis Method

Shift–share analysis method (SSA) considers the process of increasing labor productivity through the movement of economic structure and the level of labor restructuring by industry. According to the SSA approach, total productivity growth will be separated into effects based on endogenous productivity growth and sectoral restructuring. Initially, this method was developed by Fabricant (1942) to analyze an economy with two areas, but then it was modified by Syrquin (1984), Fagerberg (2000), and Timmer and Szirmai (2000) to apply to a multidisciplinary economy.

Assuming the economy is divided into i sectors ($i = 1,... n$). Calling P_A is social labor productivity, measured by the total output value (Y_A) on the total number of employees (L_A), so $P_A = Y_A/L_A$. Similarly, labor productivity of industry i, P_i: So $P_i = Y_i/L_i$. Calling L_A is the total number of employees working and L_i is the number of employees working in industry, then the proportion of working employees in industry i will be S_i, $S_i = L_i/L_A$. We have the formula as follows:

$$P_A = \frac{Y_A}{L_A} = \sum_{i=1}^{n} \left(\frac{Y_i}{L^i}\right) * \left(\frac{L^i}{L_A}\right) = \sum_{i=1}^{n} P_i * S_i$$

Differences in social labor productivity between the two periods 0 and T:

$$P_i^T - P_i^0 = \sum_{i=1}^{n} P_i^o * \left(S_i^T - S_i^o\right) + \sum_{i=1}^{n} \left(P_i^T - P_i^o\right) * \left(S_i^T - S_i^o\right) + \sum_{i=1}^{n} \left(P_i^T - P_i^o\right) * S_i^o$$

Calling GP_A is the speed of social labor productivity growth of the year T compared with the base year ($t = 0$), the formula for calculating GP_A is as follows (Ark 1995; Timmer and Szirmai 2000):

$$\mathrm{GP}_A = \frac{\sum_{i=1}^{n}\left(S_i^T - S_i^0\right) * P_i^0}{\sum_{i=1}^{n} P_i^0} + \frac{\sum_{i=1}^{n}\left(S_i^T - S_i^0\right) * \left(P_i^T - P_i^0\right)}{\sum_{i=1}^{n} P_i^0} + \frac{\sum_{i=1}^{n}\left(P_i^T - P_i^0\right) * S_i^0}{\sum_{i=1}^{n} P_i^0}$$

The above equation evaluates the speed of social labor productivity growth based on three divisions: the first term on the right-hand side of equation denotes static effect, the second denotes dynamic shift effect, and the last denotes endogenous effect.

Static shift effect measures the growth rate of aggregate labor productivity through shift in labor structure from low productivity industries to high productivity ones using value of labor productivity of the industry in the first year of research period. According to Chenery (1986), the capital-to-labor ratio in light industries is lower than that in heavy ones, and transfer of labor from light industries to heavy ones tends to make aggregate labor productivity increase because capital-intensive industries usually obtain a higher labor productivity.

Static shift effect, moreover, plays an important role in developing countries, especially agricultural countries where population density is high and idle or redundant labor is common. Transfer of labor from agricultural sector with low labor productivity to industrial one with higher labor productivity is therefore considered as "a structural bonus" for developing countries (Timmer and Szirmai 2000). That means the hypothesis of "structural bonus" is based on expectation that contribution from static shift effect to growth of the productivity of social labor is positive:

$$\frac{\sum_{i=1}^{n} P_i^o\left(S_i^T - S_i^o\right)}{\sum_{i=1}^{n} P_i^o} > 0$$

Unlike static shift effect that only reflects transfers to high-productivity industries, dynamic shift effect measures the growth of aggregate labor productivity based on changes in both labor productivity and speed of growth of labor productivity in the industry. If the labor moves to industries where both labor productivity and its growth rate are high, it may make the aggregate labor productivity increase and positive interactive effects greater. Contrarily, the economy may suffer a slowdown when the labor moves from high growth rate and high-productivity industry to traditional ones characterized by a low productivity. Baumol (1967) called it a "structural burden" in the labor relocation in each industry. Thus, the dynamic shift effect will be negative when a structural burden appears:

$$\frac{\sum_{i=1}^{n}\left(P_i^T - P_i^o\right)\left(S_i^T - S_i^o\right)}{\sum_{i=1}^{n} P_i^o} < 0$$

The final effect in social productivity is the endogenous effect. This effect reflects the change of labor productivity when there is no labor restructuring and the size of labor working in each industry in the economy remains constant. In other words, the endogenous effect is the result of renovation, application of technological advances, improvement of labor skills, and institutional factors (Nguyen 2007). If referenced with the concept of total factor productivity (Tang 2005), the endogenous effect can also be considered as total factor productivity (Nguyen and Nguyen 2013; Nguyen 2018).

2.2 Data Description

Applying the shift-share analysis method presented above, this research uses the data of General Statistics Office in Vietnam on the annual labor force and the value of the gross domestic product by sector in the period of 1996–2017, expressed in 2010 comparative price.

3 Results

Table 25.1 shows the contribution of sectors and restructuring to labor productivity in Vietnam according to the five stages of economic development. In the economy, the industry (including mining industry, manufacturing, electricity, gas, water supply, and construction) always plays an important role in the growth of aggregate labor productivity in all stages of research. In particular, in the first stage, 1996–2000, industrial labor productivity increased by 9.23% point, which is equivalent to a 53.6% contribution to the growth of social labor productivity. This contribution is higher than the total contribution of both the agricultural and service sectors. In the next four phases, although the labor productivity growth of this region is lower than the service sector, its contribution rate is always above 36%. For the whole period of 1996–2017, the service sector has been leading in the rate of labor productivity growth, with a total increase of 46.88% points, contributing 46.9% to the increase in productivity within 22 years. Industry ranked second with an increase of 43.7% points. Finally, the agricultural sector only increases 6.8% points, corresponding to 7% contribution to the growth rate of social labor productivity. The above results are generally consistent with the sector development objectives and the trend of economic restructuring in Vietnam. At the same time, it also reflects

Table 25.1 Contribution of restructuring and sectors to growth of Vietnam's labor productivity in the period of 1996–2017 (%)

Period		Agriculture	Industry					Services	Total
			Mining	Manufacturing	Electricity, gas, stream	Construction	Total		
1996–2000	Static effect	−1.36	−1.07	2.71	−0.02	0.94	2.56	3.42	4.62
	Dynamic	−0.18	−0.58	−0.07	−0.01	−0.01	−0.68	0.14	−0.71
	Endogenous	3.49	7.02	−0.33	0.77	−0.11	7.35	1.68	12.52
	Productivity	1.95	5.37	2.30	0.74	0.82	9.23	5.24	16.42
2001–2005	Static effect	−2.94	−1.60	2.05	0.76	3.80	5.01	9.54	11.61
	Dynamic	−0.60	−0.17	0.37	0.16	−1.62	−1.26	−0.42	−2.27
	Endogenous	4.73	1.64	2.37	0.50	−3.23	1.27	−1.69	4.32
	Productivity	1.20	−0.14	4.79	1.41	−1.04	5.02	7.43	13.66
2006–2010	Static effect	−2.23	−0.78	0.09	−0.54	2.20	0.98	6.59	5.33
	Dynamic	−0.33	0.01	0.02	−0.29	−0.23	−0.48	−0.78	−1.60
	Endogenous	3.13	−0.13	3.74	1.81	−0.61	4.80	−4.85	3.08
	Productivity	0.57	−0.90	3.85	0.98	1.36	5.30	0.95	6.82
2011–2015	Static effect	−1.67	−1.85	1.99	0.10	0.07	0.32	3.81	2.46
	Dynamic	−0.24	−0.64	0.17	0.04	0.02	−0.41	0.45	−0.20
	Endogenous	2.64	3.35	1.63	1.60	1.36	7.93	4.68	15.25
	Productivity	0.73	0.86	3.80	1.74	1.45	7.84	8.94	17.50
2016–2017	Static effect	−0.71	−0.98	0.78	−0.17	0.36	0.00	0.91	0.20
	Dynamic	−0.05	−0.05	0.08	−0.02	0.01	0.02	0.05	0.01
	Endogenous	2.71	0.86	3.93	1.54	0.43	6.75	4.70	14.16
	Productivity	1.95	−0.17	4.80	1.34	0.81	6.77	5.65	14.37
1996–2017	Static effect	−11.22	−5.63	12.59	2.41	15.62	24.99	36.65	50.42
	Dynamic	−13.64	−5.77	7.10	3.66	−6.10	−1.11	4.92	−9.83
	Endogenous	31.72	13.19	6.86	2.71	−2.91	19.85	5.32	56.89
	Productivity	6.86	1.78	26.56	8.78	6.61	43.73	46.88	97.48

Sources: Calculation from GSO Vietnam data

a part of the importance of the industrial sector to the country's economic development in the process of industrialization and modernization.

Considering the contribution of individual industries to the process of increasing labor productivity, the calculation shows that the mining industry has a declining role in the development of the industrial sector in particular and the economy in general. In the period 1996–2000, the mining had the highest contribution to the growth rate of internal labor productivity (5.37% points, equivalent to 58%) and the aggregate labor productivity (32.7%). That contribution is entirely based on the labor productivity, not by restructuring. At this stage, the mining was still a sector with a rapid increase in labor productivity, but the proportion of labor decreased. This has led to the emergence of a "structural burden" that reduces the sector's contribution to the rate of labor productivity growth in the economy. In the next stages, besides the decline in the proportion of labor, the mining has little innovation in technology, so the endogenous labor productivity is not high, from 7.02% points in the period of 1996–2000, reduced to 1.64 and −0.13% points for the next two periods. As a result, in 10 years (2001–2010), the mining has not only contributed but also reduced the rate of increase in social labor productivity. This shows that the importance of the mining industry in the industrial sector has decreased markedly. Instead, the manufacturing industry is increasingly developing.

Manufacturing is one of the few industries fully benefiting from the process of restructuring through labor migration as it both increases labor productivity and labor density and becomes a dynamic economic sector. In the period 1996–2000, the contribution of manufacturing industry to labor productivity growth in the industry - construction was still very small, accounting for only 25%, while the mining industry reached 58%. However, in the next periods, manufacturing is always in the leading position with very high contribution: 95.4% for the period 2001–2005, 72.6% for the period 2006–2010, 48.5% for the period 2011–2015, and 70.9% for the period 2016–2017. For all 21 industries in the economy, manufacturing is still a sector that contributes a major part to the growth rate of aggregate labor productivity. The contribution rate in the five research stages is 14.8%, 35.1%, 56.5%, 21.7%, and 33.4%.

In addition, the analysis results show that besides the positive contribution of the static effect, the dynamic effect in manufacturing has also brought "structural rewards" to the economy through its positive impact on the growth rate of aggregate labor productivity. This means that manufacturing enterprises have had qualitative changes over the past time. They not only expand in scale through using more labor than in the previous period, but also increase labor productivity through improving machinery, applying technology, improving skills, etc.

In parallel with the manufacturing, the construction is also one of the five dynamic sectors in the period of 1996–2017. This sector contributed 15.1% to the growth rate of internal industry and 6.8% to the growth rate of aggregate labor productivity. In the first decade of the twenty-first century, the endogenous labor productivity of the construction has been greatly reduced. That is the reason why it lost its dynamism and thus made a small contribution to the aggregate labor productivity. However, through the first half of the second decade, the construction

showed signs of recovery in terms of static, dynamic, and endogenous labor productivity. It has pushed the construction's labor productivity to 18.5% and contributed 8.3% to the growth rate of social labor productivity.

Thus, by analyzing the data based on the SSA method in the period of 1996–2017, it can be seen that both the endogenous labor productivity and the process of internal restructuring in the industry play an important role in the growth rate of aggregate labor productivity in the economy. If the contribution of endogenous labor productivity to the growth rate of social labor productivity decreases over time, the contribution of restructuring tends to increase, especially the static shift effect. That is due to the movement of labor from the industry with lower labor productivity to higher labor productivity. Static effects of industrial sectors have contributed to the growth rate of aggregate labor productivity in 5 periods, i.e., 15.6%, 36.7%, 14.3%, 1.8%, and 0%, respectively. This result is evidence of a strong industry restructuring process in the period 1996–2010. It also reflects Lewis's theory about the shift of the labor from agriculture to industry in a country that begins to industrialize when labor in agriculture is abundant (Lewis 1954). The highly significant result of static shift effect in Vietnam implies that high growth of labor productivity in Vietnam in its first period of industrialization can be achieved by a simple transfer of surplus labor from agricultural sector to nonagricultural sectors where the labor productivity is much higher.

In addition, the SSA method shows that some sectors that are dynamic development will benefit from the dynamic effects in the process of the restructuring. Among those sectors, the leading industry is manufacturing. Since 2001, manufacturing has started to develop and act as a "modern area" with higher productivity and more labor absorption. Therefore, dynamic effects are promoted, creating the conditions to control the growth rate of labor productivity in the economy.

4 Conclusions and Discussions

Vietnam Industrial Development Strategy to 2025, vision to 2035, has been specified in decision No.879QD-TTg (The Prime Minister 2014). Accordingly, the government aims to 2025; Vietnam's industry will develop with a reasonable structure by sector and territory, having the competitiveness to grow in integration, having modern technology and participating in global value chains in a number of specialties and fields, and having the ability to basically meet the requirements of the economy and export. By 2035, Vietnam's industry will be developed with the majority of specialties that have advanced technology; industrial product quality will reach international standards; products will deeply participate in the global value chain, using energy economically and efficiently. The workforce is professional, disciplined, and highly productive.

A new strategy is seen necessary to promote restructuring. Although this adjustment does not clearly show which sector is key to restructuring, there is a perception of the characteristics of Vietnamese economy to consider priority sectors. It

emphasizes and focuses on manufacturing instead of focusing on heavy industries and mining as development strategies in the earlier stages. This adjustment may help the Vietnamese labor productivity to be improved, because the calculated data show that manufacturing industries are dynamic sectors, which have a positive impact on sectoral restructuring.

On the other hand, the calculation data also show that manufacturing has not created a breakthrough to contribute more to the growth rate of labor productivity. The growth rate of labor productivity in this sector only reached 2.3, 4.79, 3.85, 3.8, and 4.8% points for 5 research periods. The slow growth in labor productivity in manufacturing may be due to inefficiencies in the internal manufacturing structure. The fastest-growing sectors that make the biggest contribution are simple labor-intensive industries, which have an increasingly high intermediate cost. These manufactured products are mainly processed and assembled products, accompanied by imported raw materials and semifinished products. This fact shows that the process of industrial development toward improving labor productivity depends not only on the orientations and policies of the industrial development but also on the tools to implement those orientations and policies, such as institutions, businesses, human resources, and technology. In Vietnam, these tools seem to have not developed synchronously and without mutual support. This is one of the reasons that makes sectoral restructuring happen slowly and less dynamic industries being created. Therefore, in the process of implementing the industrial development strategy, the policies set by the government need to focus on creating incentives and increasing competitiveness for industries, forming a mechanism to prioritize investment for those sectors that promote productivity and superior efficiency. Thus, the industry can well implement the objective of reasonable restructuring, contributing to increased labor productivity in the economy.

In addition to investment incentives from the government, Vietnam's industry must be aware that science and technology are the key to boosting labor productivity and promoting rapid and sustainable economic growth. Weak technology capacities not only directly affect internal labor productivity but also create invisible barriers to labor migration, resources, and restructuring. Therefore, in order for science and technology to carry out its mission to the development of the country, the state needs to implement policies, such as training, attracting investment to innovate technology, technology transfer, and creating favorable conditions for scientists and experts to develop with their talents and let them enjoy the benefits worthy of their creative labor value. Moreover, the government should perform socialization of science and technology service activities, calling on Universities to actively participate in the science and technology market through training–research–technology transfer mechanisms associated with social needs. Along with socialization activities, the government should create conditions to help businesses expand cooperation in science and technology development with partners as well as apply technological advances to production.

Finally, in order for Vietnam industry to have the opportunity to participate in higher stages in the global chain as in the industrial development strategy, Vietnam must have high-quality industrial human resources. For this, Vietnam should quickly

focus on renewing the education system toward developing thinking capacity, creative capacity, fostering industrial style, increasing organization, discipline, cooperation, self-esteem, trust, community, conscience, and civic responsibility. It is necessary to determine that this is a very difficult task that cannot be completed in a short time, but it must be done regularly, continuously, persistently, and deeply from early childhood education and primary education to high school and university so that those qualities naturally absorb and become everyone's self-discipline. After all, economic growth must be based on workers' skill, technology, and initiative.

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Chapter 26
Improving the Competitiveness for Enterprises in Brand Recognition Based on Machine Learning Approach

Nguyen Thi Van Trang, Thi-Lich Nghiem, and Thi-Mai Do

Abstract Brand identity plays a vital role in business success. With the strong development of the market economy and scientific and technologiccal revolution, there are many new brands introduced to the market. So, how can customers identify that brand belongs to what industry or that logo is true or false? Therefore, the enterprises should have good strategy to enhance their competitiveness, especially in the recognizing brand. Logo of the enterprise can be used as suitable objects in computer vision applications for recognizing brands and providing associated services such as logo-based commercial research, and brand trend analysis. In this paper, we will present an overview of the brand and the importance of brand recognition. Then, the paper discusses the brand determination by using different approaches, thereby showing the pros and cons of these methods. Finally, we propose strategies to improve the competitiveness for enterprises in brand recognition based on machine learning model. The results show that our method increased the performance in brand recognition with large input size; conduce to help businesses maintain; and expand and improve trust for customers. It can also contribute to prevent unfair competition, and enhance the enterprise's position in the domestic and international market.

Keywords Brand recognition · Brand attribute · Brand trust · Deep learning · Machine learning

1 Introduction

In recent years, the brand is one of the most interesting topics, especially brand recognition. It not only attracts researches and enterprises but also attracts customers. With the development of economy, the number of the business is also increasing, in

N. T. Van Trang (✉) · T.-L. Nghiem · T.-M. Do
Thuongmai University, Hanoi, Vietnam
e-mail: vantrang1987@tmu.edu.vn

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particular start-up businesses or small-medium enterprises. It leads to significant increase in setting a new brand every year (Raki et al. 2018). According to Abrahams (2016), firms with powerful brands have better stock performance all over the world. For instance, Apple is the top global brand with a total worth of 184.154 billion dollars in 2017 (Raki et al. 2018). Thus, branding is the main target of company strategy. Branding can change how people perceive the company's products. It can drive consumers' decisions when differentiating between competing companies and lead to increase market share and sales.

According to American Marketing Association—AMA, brands are defined as "Name, term, design, symbol, or any other feature that identifies one seller's good or service as distinct from those of other sellers" (Raki et al. 2018). Even though AMA's definition has developed over the recent years (Zinkhan 2007), it is still being criticized for focusing on tangible components of the brand. For instance, Stern showed that brand is "over-defined and that its meanings are variable" (Stern 2006). Furthermore, Hislop defined the brand as a "Distinguishing name or symbol designed to identify the origins of a product or service, differentiate the product or service from the competition, and protect the consumer and producer from competitors who would attempt to provide similar products" (Hislop 2001). In addition, there are numerous brands, which have a similarity with other brands such as colors and number of parts or shapes. There is a little difference between the brands. It may simply differ from other brands by ordering colors and shapes. So, the recognition of these brands has encountered difficulty with customers. It is a serious matter if they are misrecognized. Customers may lose their confidence in this brand if they buy some items with a fake brand and its reputation will be affected. Branding is a set of marketing and communication approaches that help customers to discriminate an enterprise or goods between competitors aiming to build an impression in customers' minds for a long time. In branding, it is believed that one of the most principal components is logo, especially where this factor is concerned, as it is essentially the face of the company. So, this is a reason why logo should be designed as a professional logo in order to become a powerful and easily memorable, making an impression on a person at first glance. The approaches overcoming this problem are to build printed promotional products.

Logo recognition is the most efficient way to maximize the interaction between customers and companies. In fact, and pattern recognition, especially logo recognition has been explored since 1993 (Steven et al. 2015). Logo detection and recognition found various real applications. To give an example, product brand recognition is to protect the intellectual property in e-commerce platforms, detect the means of transport, or manage a brand of goods on social media (Gao et al. 2014). Many researchers were attracted and proposed different approaches for logo recognition like decision tree, KNN, and SVM model. Although these methods have achieved promising results in recognition problems, this issue has still not solved completely and successfully yet by existing methods when the amount of data is increasing. Therefore, by using CNN method has been presented a computational efficiency.

In this paper, we provide an overview on the brand and the importance of recognizing brand. Section 2 continues with some information on related work, including the brand recognition problem, some methods to detect the brand, after that comparing between these approaches. In Sect. 3, a deep learning method like CNN model to detect the brand will be illustrated. This section also analyzes the dataset in recognition of brands and the results of evaluation, especially logo. Finally, Sect. 4 will end up with some conclusions and future work.

2 Literature Review

2.1 The Importance of Brand Recognition

In ancient period, the brand is understood merely as identification to distinguish and to affirm the value of goods and its ownership between those who make the same type of goods. With the development of a mass-produced commodity economy and the introduction of marketing theory from the mid-nineteenth century, the concept of a brand is gradually broadening its meaning. "Brand" has been widely used since the mid-twentieth century. This is the original process to manage the creation of products and services, including how to create a unique feel for the products and services. So, "branding" and "brand management" also appear almost simultaneously.

Brand awareness has also gradually improved. In the past, it is believed that brand was to distinguish products and services from manufacturers. According to Philip Kotler, brands are names, symbols, designs, or a combination of these factors in order to identify unique goods. It is distinguished from competitors' brands (Kotler and Armstrong 2002). With this traditional view, the brand is considered as a part of the goods and its main function is to distinguish its goods from competing products of the same type. By the end of the twentieth century, there were many changes in brand attitudes. From the perspective of customers, the brand is a collection of all the factors that customers can remember about the brands such as name, logo, and image. By the time, it will gradually be created and occupied a clear position in the minds of customers. Today, the brand is not only a signal to identify goods and businesses but also an image that lingers in the consumers' minds. The branding does not stop at giving the product a good name to easily remember or raising attractive slogans, and it also makes consumers to impress on their products, trust, and use your product. As a result, branding is considered as one of the most vital important features of business strategy. It seems to be that branding is central to generate the value of customer. Not just images, branding is also to become a primary tool in the process of creating and maintaining a competitive advantage.

The brand recognition is a perfect tool to promote brand name effectively, and it is an asset that needs to be cared, managed, and invested in a deep and long-term manner. There are significant benefits of brand recognition.

2.1.1 For Customer

A brand can help consumers easily distinguish goods to be purchased in numerous other similar goods. This is to determine the original goods. A good brand not only introduces the logo image professionally but also helps businesses become different and identifiable easily to customers. Moreover, it also allows consumers to feel products and services more fully such as nice design, good quality, professional style, and service attitude to evoke customers' needs.

Each good provided by a different supplier will have a different name. Therefore, consumers can easily identify the goods or services of each supplier through their brand. This is illustrated by the fact that Coca-Cola is one of the well-known soft drinks that can easily be duplicated as evident in the myriad of other colas in the market like Tab and Pepsi. Despite the fact that there are various other goods to choose from the loyal of consumers to Coca-Cola, they mostly tend to purchase their preferred brand as part of a consumers' lifestyle (Kotler and Keller 2006). Most consumers always pay attention to the brand and consider about the supplier and their reputable. So, the brand is essentially an important introduction for consumers to make a final decision on buying behavior. It is a key factor to create customers' confidence and trust.

2.1.2 For Enterprise

Brand can create the image of businesses and products in customer mindset. Customers will choose goods through their perception. When a brand first appears in the market, it has absolutely no image in the mind of customers. The good attributes such as texture, shape, size, color, and toughness will become the premise for consumers to choose them. Through brand positioning, when each customer group is formed, customer values are gradually asserted. Traditional values are preserved as a focal point for creating an image of the business. Recollections of goods and clear brand differences will be the driving force to lead consumers to their businesses and goods. This is an extremely valuable competitive advantage of traditional brands in the context of more and more new brands with outstanding uses and features appearing in the market. Reputation and belief are not easy to obtain. This is an intangible asset that brand brings to businesses. As a result, the company has an advantage in attracting investment capital, raising its stock price in addition to customer trust and loyalty. Brand recognition is an asset to help businesses grow and strengthen trust, and this helps the company stand firm in the marketplace. So, brand can improve the competitiveness for enterprise in the domestic and international market.

Famous brands around the world such as Apple and Nike have successfully built their brands. The benefits of brand identity bring millions of dollars, so businesses cannot ignore the build yourself a brand identity with bold personality.

Brand management's activities can help enterprises to look for loyal customers based on the information of positive associations and images or a strong brand's awareness. The image of brand is primary key to drive the equity of brand referring to the general perception of customers and their brand's feeling. It leads to having a negative consumer behavior. The main idea of marketers is that their marketing activities should have a positive impact on the perception of customers and the customers' attitude in order to build a brand in the mind of customers and the purchasing behavior of customers. So, it leads to not only increase sales but also maximize the market share and developing the equity of brand (Yi 2015).

In conclusion, it can be said that branding has a positive effects on the consumer and the enterprise. Branding can impact on perceptions of consumers because of values and character represented by the brand (Jooste 2005).

2.2 Some Approaches to Detect the Brand

In recent years, brand recognition demand has attracted many researchers with different approaches. However, in logo detection and identification, it faces a great deal of difficulties and challenges because of recognition of object and classification matter as there is not a clear definition about what a logo constitutes.

A logo is considered as an icon using to identify an organization, goods, or brand. Logo not only is a graphic representation of company's name, a point of identification, but also is widely used in the marketing of products and services. Logo has become a crucial part of a company's identity, and even a good logo can increase a company's value. A logo usually has a recognizable and impressive graphic design, stylized name, or attractive symbol for identifying a company called visual identity. It can be seen anywhere by advertising campaigns such as TV commercial, newspaper/magazine ads, billboards, flyers, and transit advertising.

It is the fact that a logo can be considered as a brand's artistic expression, and it includes a letter, text, picture, or any combination of these. To illustrate the classification's purpose, the appearance of some features such as color, texture, and shape is extracted. However, distinguishing logos in brands is difficult because of its color, its position in the provided images, and its specialized unknown fonts. This matter has also large intra-class variations. There are many logo's interclass variations in a specific brand. Take old and new Adidas logos, small and big Nike versions as are example. Although there exist logos, which belong to various brands, it seems to look similar to other brands (Fig. 26.1).

The main purpose of brand recognition is to recognize the goods' brand name in the image of a real product. There are many different views on brand identity. Some researchers in machine learning and pattern recognition domains show that brand recognition is one of the most classification tasks in multiclass image, where the input of image's product will be grouped into predefined brand classes. Thanks to the development of techniques in brand recognition, there are myriad of important applications built such as the guaranteeing intellectual property in e-commerce, the

Fig. 26.1 Example of logo variations images (Source: Authors' aggregation)

monitoring brand of specific goods for business intelligence, and online marketing (Fehervari and Appalaraju 2018; Stefan et al. 2011). It is considered to view as a task of multidimensional image classification, but brand recognition cannot be solved directly by applying traditional image recognition techniques. It is simply to classify which is based on the visual contents of the whole product image. This reason is that the same brand can have various types of goods like bags or shoes. So, the visual product images' contents of the same brand could be completely different.

To deal with these above-mentioned challenges, we illustrate to detect the logo by popular techniques in brand recognition. By recognizing the logo objects' appearance related to a certain brand in an image of goods, the brand recognition task can be solved by an effective approach. As a result, the difficulties of brand recognition can be reduced into solving a logo detection task from real product images. Finally, we show that a single brand can consist of multiple logo classes.

There are some methods for brand recognition, in particular logo identification.

2.2.1 Decision Tree Methods

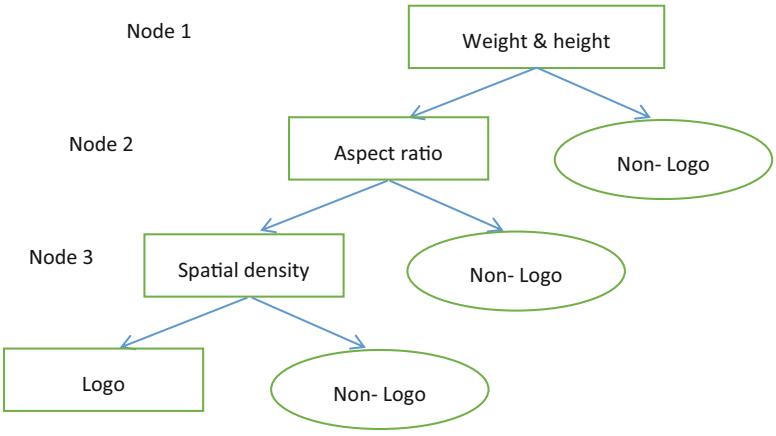
Decision tree is known as classification, and regression trees were introduced by Breiman (1984) to refer decision tree algorithms, which are supervised learning algorithm. They are mostly used in nonlinear decision making with simple linear decision surface.

It is the fact that a decision tree is simplest to use in logo and nonlogo region classification. It can be shown in Fig. 26.2. In this decision tree, three features like weight and height, aspect ratio, and spatial density features in three steps will create the decision. The sequence of this decision tree is formed based on making decision from low complexity through high complexity (Sina and Hossein 2011).

2.2.2 K-Nearest Neighbor (KNN)

Besides other approaches in supervised learning, the simplest classifier is KNN algorithms in Altman (1992).

In pattern recognition, K-nearest neighbor is classification algorithm that uses specific training patterns to predict class labels without building a classification model from data. The new data samples need to change class label that is layered based on its distance from all the samples in the training dataset. There are many different distance measures, often using the Euclid distance to calculate the distance between objects. The idea of the algorithm is very simple, for a new data sample to classify the distance from that sample to all the samples in the training dataset after finding the nearest neighbor with it. The class label of the new data sample is the class label with the majority of elements in its neighbors. Therefore, it can enhance



(Source: Authors' extraction from Sina et al. 2011)

Fig. 26.2 An illustration of decision tree classifier (Source: Authors' extraction from Sina and Hossein 2011)

the classification performance (Amita Goel et al. 2017). This idea of KNN extends by taking the *k*-nearest points and assigning the majority label. It is common to select *k* small and odd values to break ties (typically 1, 3, or 5). Larger *k* values help to reduce the noise examples in training dataset, and the choice of *k* is often performed through cross-validation.

2.2.3 Support Vector Machine (SVM)

Support vector machine (SVM) is a famous classification method introduced by Vapnik (1982), and SVM is a binary classification method based on the maximum margin distance strategy. Initially, SVM was designed for linear binary classification problems such as handwritten character and digit recognition (LeCun et al. 1995), face detection (Osuna et al. 1997), text categorization (Joachims 1998), and object detection in machine vision (Papageorgiou et al. 1998; Efstathios Kirkosa 2008). SVM is a supervised learning method for classification and regression analysis. The goal of SVM is to build a hyperplane separating the two layers of data (negative and positive layers) so that the distance from this separated super plane to the points closest to it (called the margin) is maximized.

Specifically, SVM belongs to the class of maximum margin classifiers. They perform pattern recognition between two classes by finding a decision surface that has maximum distance to the closest points in the training set, which are termed support vectors. We start with a training set $x_i \in R^n$, $i = 1 \ldots N$, where x_i is one of two identified classes by the label $y_i \in \{-1, 1\}$. Assuming linearly separable data, the goal of maximum margin classification is to separate the two classes by a hyperplane (Fig. 26.3). As a result, the distance to the support vectors is maximized (Boser and Vapnik 1992; Heisele et al. 2001).

We focus on training data to find this decision boundary. In this figure, the training datasets are support vector filled up with red and blue color.

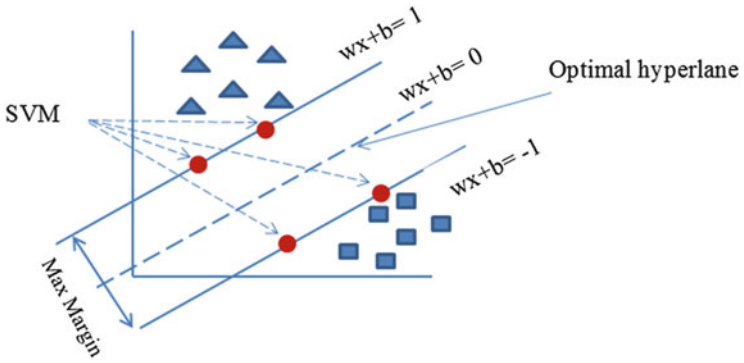


Fig. 26.3 Example of hyperplane in support vector machine (Source: Authors' aggregation)

3 Methodology

3.1 Convolutional Neural Networks

In machine learning approach, deep learning has achievement in promising results in the diversified object detection. Convolutional neural networks (CNNs) are units of the advanced deep learning models for recognition of object (Alex et al. 2012). It helps us to build intelligent systems with high accuracy today. Another positive aspect is that CNN belongs to recurrent neural networks used to learn image representations being applied to computer vision (Huang et al. 2015; Liu and Fang 2015).

In particular, deep CNNs include multilayers with linear and nonlinear operations that are learned at the same time, in an end-to-end procedure. To tackle a specific task, the layers' parameters are learned over several iterations. In recent years, CNN is considered as one of the most classification algorithms to extract some features from images and video data. So, CNN recognition has been widely used as an efficient method in the vehicle logo classification (Huang et al. 2015; Thubsaeng et al. 2014).

A CNN includes the layers of convolution and pooling occurring in an alternating fashion. Convolution layer is one of the most layers in CNN structure. It has two types, including convolution filter and convolutional layer. In a normal neural network, from input, we go through the hidden layers and then output. For CNN, the convolutional layer is also a hidden layer, and other than that, the convolutional layer is a set of feature maps and each of these feature maps is a scan of the original input, but is extracted to specific features/properties. How to scan depends on the convolution filter or the kernel. This is a matrix that will scan through the input data matrix, from left to right, top to bottom, and multiply corresponding values of the input matrix that the kernel matrix then sums up, giving via activation function (sigmoid, relu, elu, etc.), the result will be a specific number, and the set of numbers is another matrix, which is the feature map. The rest part of CNN is pooling. The purpose of pooling is that it reduces the number of hyperparameters that we need to calculate, thereby reducing calculation time and avoiding overfitting. The most common type of pooling is max pooling, taking the largest value in a pooling window. Pooling works almost like a convolution, it also has a sliding window called a pooling window, and this window slides through each value of the input data matrix (usually the feature map in the convolutional layer), picking price values from the values in the sliding window (with max pooling, we will get the maximum value).

3.2 Methodology of CNN

Applying convolutional neural network (CNN) has been becoming significant in various areas. In 1998, LeCun and his team specially designed convolutional neural

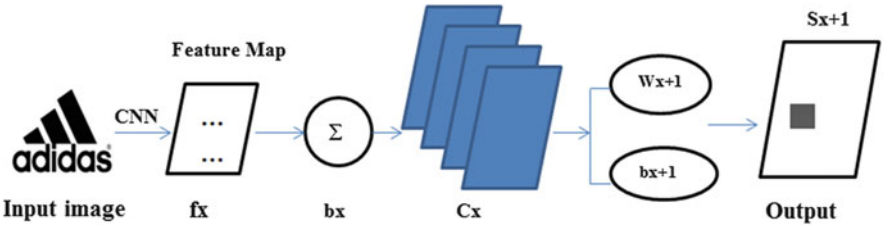


Fig. 26.4 Basic CNN process (Source: Authors' aggregation)

Fig. 26.5 Simplified logo classification (Source: Authors' aggregation)

networks to deal with the variability of 2D shapes, which are shown to outperform all other techniques (Lecun et al. 1998). A fast, fully parameterizable GPU implementation of convolutional neural network variants for image classification is presented by Dan et al. (2011). Another team proposed two novel frontends for robust language identification (LID) by using a CNN trained for automatic speech recognition (ASR). Moreover, CNNs are used in visual recognition (Lecun et al. 2010) and many other areas such as facial point detection (Sun et al. 2013), house number digit classification (Lecun et al. 2010; Lecun 2012), multidigit number recognition from Street View imagery (Goodfellow et al. 2013) and coral detection (Ammar et al. 2017).

A CNN being a type of feedforward network structure is formed by multiple layers of convolutional filters alternated with subsampling filters followed by fully the connection of layers.

Convolution and sampling are the main components of basic processes in CNN algorithm.

Convolution process uses a trainable filter fx, deconvoluted input image. It includes two stages. The first step is the input image which the input of the after convolution is the feature image of each layer, namely feature map. After that adding a bias, bx is happened in the second step. So, we can get convolution layer Cx.

A sampling process: At the stage, pooling layers will transfer that input image represented by n pixels into a pixel by applying max-pooling or average-pooling. After that, at the x+1 filter, the weight of scalar weighting Wx + 1 is calculated and added bias bx+1. Then it procedures feature map Sx+1 and this can reduce the amount of parameter and computation in the network (Fig. 26.4).

Figure 26.5 shows the proposed CNN-based classification (Simone et al. 2017)

After training CNN, a threshold is given based on the top of the CNN predictions (see in Figs. 26.6 and 26.7). If the CNN prediction with the highest reliability is

Fig. 26.6 Logo recognition training process (Source: Authors' aggregation)

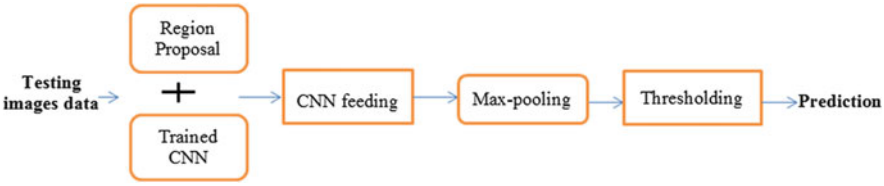


Fig. 26.7 Logo recognition testing process (Source: Authors' aggregation)

below this threshold, the annotated region is assigned as nonlogo. Otherwise, CNN prediction is unchanged. Figure 26.7 illustrates the testing framework of CNN training process. With a test image, we extract the object proposals through algorithm used just like training. Then, we proceed contrast normalization over each proposal (if enabled at training time) and feed them to the CNN. The CNN predictions on the proposals are max-pooled, and the class identified with highest confidence (eventually including the background class) is selected. If the CNN reliability for a logo class is above the threshold that has been learned in training, the corresponding logo class is assigned to the image, otherwise the image is labeled as not containing any logo.

One of a numerous logo images in database to facilitate the computer vision research like logo detection and product brand recognition is LOGO-Net. In the datasets of current LOGO-Net, there are 160 logo classes, 100 brands, 73,414 images, and a total of 130,608 logo objects manually labeled with bounding boxes by human beings. An example image for each class of the LOGO-Net datasets is reported in Fig. 26.8.

"UoMLogo" dataset includes 5044 color logo images. This database has a significance in the number of color different logos collected from various sources such as universities, brands, sports, banks, insurance, cars, and industries This dataset is divided into three classes, including 1246 text image datasets, 627 symbol image datasets, 3171 combination of TEXT and SYMBOL datasets. Within class, there exist ten different subclasses such as university, sport, bank, insurance, car, brand, Govt. & Political party, UNO media, and industry.

In this paper, we use the Chars74K dataset including all English alphabet letters in upcase as well lowercase along with ten digits from 0 to 9. The number of images that used in this experiment is totally 26,416 and limited to capitalized characters (A–Z), which each of characters contains 1016 different style of images. The composition of training and testing set is divided into 70/30.

Tobacco-800 is a public subset of the complex document image processing (CDIP) test collection (Kumar 2016) constructed by Illinois Institute of Technology, assembled from 42 million pages of documents (in 7 million multipage TIFF

Fig. 26.8 Some logo images from the LOGO-Net dataset (Source: Authors' extraction from LOGO-Net dataset)

images) released by tobacco companies under the Master Settlement Agreement and original hosted at UCSF (Tobacco800 Complex Document Image Database (n.d.)). Tobacco-800 is composed of 1290 document images collected based on a special collection building method (Lewis 2006), but only has 416 logo images. We use 100 for training and 316 as the testing set.

3.3 Results

In order to evaluate the proposed classification performance, we can use four criteria, including accuracy, precision, recall, and F-measure. In image classification, a confusion matrix CM_{ij} is generated during classification of color logo images at some testing stage. From this confusion matrix, accuracy, precision, recall, and F-measure are computed to evaluate classifiers' performance. In our proposal, we use accuracy, which is the ratio of the number of correctly classified samples to evaluate the efficiency of a classification model. It is defined as follows:

$$\text{Accuracy} = \frac{\text{No.of correctly classified samples}}{\text{Total number of samples}} \times 100$$

Table 26.1 summarizes the vital results of brand recognition on the test when using CNN approach. In this dataset, it is divided into three subdatasets, including

Table 26.1 Results of some datasets using four approaches

	Dataset	Samples	Attribute	Accuracy (%)
KNN	UoMLogo	5044	10	56.02
Decision tree	Tobacco-800	1290	416	76.60
SVMs	Chars74K	26,416	1016	81.21
CNN	LOGO-NET	130,608	160	95.20

Source: Authors' aggregation

training dataset, test dataset, and validation dataset. The validation dataset was only used for choosing key parameters of each sample. Several observations can be drawn from the main experimental result.

It is clear that Logo-Net dataset using CNN method has achieved best results with 95.20% compared to all other methods such as KNN, decision tree, and SVM. There is a big gap in accuracy results between four approaches in different datasets. KNN seems to have the worst results compared to decision tree and SVM (56.02, 76.60, and 81.21, respectively).

4 Conclusions and Discussion

The analysis shows that customers are strongly attracted to professional brand images. So, the right brand identity plays a vital role for customers.

There are many approaches proposed in recognition problems such as fuzzy logic, genetic algorithm, statistical probability model, and neural network. Although these methods have a significant achievement, specific accuracy is not high in cases of large brand recognition datasets. The reason is that lacks of specific factors of good identification problem such as quantity, categories, changing shape, and color as well as which these specific features can be hidden, blurred or not good image quality, etc. Thanks to the strong development of information technology, we have witnessed many breakthroughs in machine learning, especially computer vision. It not only solves problems with large datasets but also enhances the performance and accuracy superior to traditional algorithms.

In this paper, we have addressed a critical and common problem in brand recognition, known as the logo. We presented the overview of brands, some problems in brand detection. In order to improve the competitiveness of enterprises in brand recognition, we proposed machine learning approaches. We performed an experiment by LOGO-Net datasets. The results showed that this approach achieved better than other approaches including SVM and decision tree. Although CNN improved the recognition performance, there still exist several topics left to be considered in the near future. It may be interesting to consider the combination of some methods such as CNN and decision tree, CNN, and SVM. Dealing with these challenges will be a key idea of our approach in the future.

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Chapter 27
The Role of Official Development Assistance on the Development of Economic Infrastructure in Vietnam

Thi Vu Ha Nguyen

Abstract Official development assistance (ODA) is a significant external financial resource in Vietnam. This aid has made meaningful contributions to the socioeconomic development and poverty reduction in Vietnam. ODA is one of the capitals that belongs to the state budget and is prioritized to improve social and economic infrastructure in Vietnam as infrastructure is the engine for economic growth. The international donor community spent about 15.79 billion U.S. dollars in economic infrastructure development in Vietnam in the period of 2010–2017, which helped to improve economic conditions in Vietnam. However, ODA projects on economic infrastructure development have been usually prolonged, raised capital, and then caused debt burden for Vietnam. Besides, this financial resource has been decreasing since Vietnam became a low middle-income country in 2010 and achieved the millennium development goals in 2015. This paper focuses on analyzing the role of ODA on economic infrastructure development in Vietnam and its consequences from 2010 to 2017 based on the database of donors' projects in Vietnam published on the OECD's website.

Keywords Official development assistance (ODA) · Infrastructure · Transportation · Energy · Vietnam

1 Introduction

Official development assistance (ODA) is defined by OECD as government aid aimed to foster the economic development and welfare of developing countries. This financial help is provided by official agencies, including state and local governments, or by their executive agencies. According to Asteriou (2009), Karras (2006),

T. V. H. Nguyen (✉)
VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam
e-mail: hantv@vnu.edu.vn

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and Van Dan and Binh (2019), ODA has positive and significant impacts on economic growth in developing countries.

ODA can take the form of types such as (1) grants, where financial resources are provided to developing countries free of interest and with no provision for repayment; (2) soft loans, which have to be repaid with interest, albeit at a significantly lower rate than if developing countries borrowed from commercial banks; and (3) the provision of technical assistance. Donors may provide ODA to the recipient directly or through a multilateral development agency such as the United Nations or the World Bank.

Each transaction of ODA is concessional and conveys a grant element of at least 25% of the total (calculated at a rate of discount of 10%). Moreover, ODA loans have a prolonged loan maturity and an extended grace period. Then, one of the characteristics of ODA is *preferential*. For instance, ODA provided by WB has the loan maturity of 40 years and a grace period of 10 years (World Bank, 2017). Another characteristic of ODA is *compulsory*. Namely, Japan requires that Japanese ODA must be in Japanese Yen (Ministry of Foreign Affairs, 1998). At least 19% of aid from countries of the OECD Development Committee (DAC) is tired aid that required recipients to purchase goods and services from the donor countries (Oliveira & Zacharenko, 2018). Last, ODA can cause *debt burden* if the recipient country does not use this financial flow effectively, especially in the area of economic infrastructure. A large amount of assistance being disbursed does not directly guarantee aid effectiveness and undoubtedly leads to a heavy debt burden on aid recipient countries when the assistance takes the form of (low-interest) loans (Iimi, 2006). Moreover, ODA projects on economic infrastructure development are usually prolonged and raised budget.

Vietnam has become a model for achieving rapid economic development, and an important element in this success has been the ODA that the country has received from around the world (Feasel, 2013). ODA supported the socioeconomic development and poverty reduction in Vietnam much. In particular, the social and economic infrastructure was the area that received ODA the most. The international donor community spent about 15.79 billion U.S. dollars in economic infrastructure development in Vietnam in the period of 2010–2017 [compiled by the author from OECD (2018a)], which helped to improve economic conditions in Vietnam. According to ADB et al. (2005), developing infrastructure could promote business activities particularly in industrial production and help raise the incomes of the poor, reduce infant mortality, increase school attendance rates, and extend hours of learning. However, concerns have been raised about the impact of infrastructure development on the environment and local communities, about waste through corruption in public spending and private contracts, and about the appropriate roles of the public and private sectors in infrastructure financing, ownership, and management.

ODA has been decreasing since Vietnam became a low middle-income country in 2010 and achieved the millennium development goals in 2015. In 2017, according to World Bank conditions, Vietnam will no longer receive concessional loans from the International Development Association (IDA). This paper has three sections. Section 1 provides an overview picture of ODA in Vietnam from 2010 to 2017.

Section 2 analyzes the role of ODA in economic infrastructure development in Vietnam. Section 3 draws some conclusions and discusses specific issues caused by ODA in Vietnam.

2 Overview of ODA in Vietnam from 2010 to 2017

ODA is an essential external resource in Vietnam. Since Vietnam became a low middle-income country in 2010, the total ODA commitment reached nearly 39.15 billion USD from 2010 to 2017. Vietnam disbursed over 33.13 billion USD, approximated 84.64% of total ODA commitment [compiled by the author from OECD (2018a)]. Although the ratio of ODA to Vietnam's GDP was small, about 3% of GDP each year [compiled by the author from OECD (2018a)], this resource has been playing an essential role in social and economic development since the budget for growth was still limited in Vietnam.

The ODA disbursement in Vietnam increased from 2010 to 2014 but declined from 2015 to 2017. Besides, from 01/7/2017, *Vietnam has officially graduated from ODA under WB benchmarks*, which means that Vietnam no longer receives concessional loans from the IDA. The Asian Development Bank (ADB) also ranks Vietnam in group B, a group for blend countries, not in group A, among those that only receive preferential loans. However, Vietnam has succeeded in negotiating and constructing a mechanism to support the transformation of ODA graduation in 3 years (World Bank, 2018) (Fig. 27.1).

The ratio of ODA to total national income (GNI) kept decreasing in Vietnam, but ODA per capita *is continuously increasing*. In 2010, ODA disbursement reached

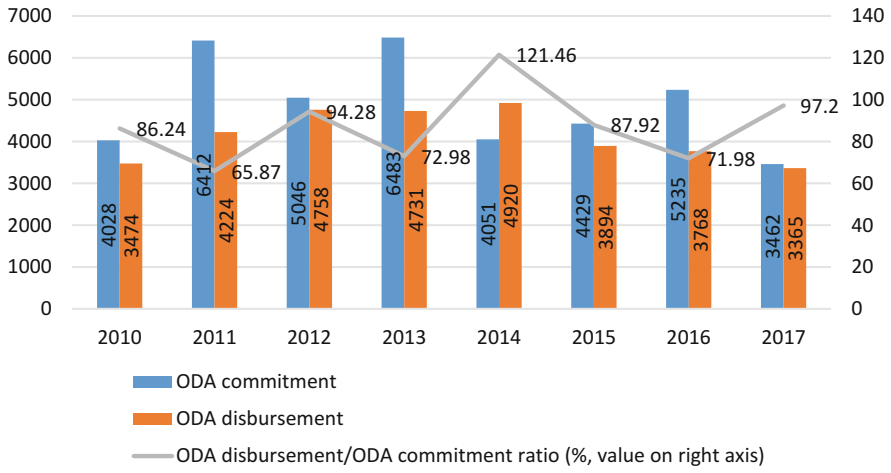

Fig. 27.1 Total ODA commitment and disbursement to Vietnam from 2010 to 2017 (million USD) (Source: OECD, 2018b)

2.64% of GNI, but by 2017, this figure dropped to 1.11% of Vietnam's GNI. ODA per capita in 2014 was 45.55 USD, but by 2017, it plummeted to only 24.87 USD [compiled by the author from OECD (2018a)]. Although it is known as an essential and planned external resource, the contribution of ODA to GNI of Vietnam is quite modest. However, this source of capital plays a vital role in development investment in the context of the limited state budget and high demand for developing socioeconomic infrastructure.

ODA into Vietnam is mainly in the form of ODA grants and ODA loans, in which ODA loans tend to increase and account for a more significant proportion compared to ODA grants. Throughout the whole period, ODA loans took up 77.8% of total ODA disbursement, especially in 3 years from 2014 to 2016, when ODA loans accounted for over 80% of total ODA commitment [compiled by the author from OECD (2018a)]. In terms of disbursement/commitment ratio, ODA grants to Vietnam always have a very high figure, up to 97.43% for the whole period of 2010–2016, 17% higher than this ratio for ODA loans. However, the worrying point is that the disbursement/commitment rate of ODA loans kept decreasing, from 84% in 2010 to only 67.7% in 2016 (except for 2014, when it reached 128% due to accrued accumulation from previous years) [compiled by the author from OECD (2018b)]. Because of the gradual increase in ODA loan proportion, the amount of ODA loan repayment in Vietnam has increased over the years, reflecting the increasing ODA burden on the economy. From 2010 to 2017, Vietnam had to pay more than 5.83 billion USD for ODA's repayment and more than 2.3 billion for ODA's interest, reaching nearly 8.15 billion USD in total (equivalent to 24.6% of total ODA disbursement) [compiled by the author from OECD (2018b)] . Besides these two forms of ODA (ODA grants and ODA loans), there is another form of ODA to Vietnam, which is ODA invested in assets (equity investment). However, this form accounts for a tiny proportion (0.43% of total ODA to Vietnam for the whole period of 2010–2017) with a value of approximately 142.54 million USD for the entire period [compiled by the author from OECD (2018b)].

Countries in the OECD Development Assistance Committee (DAC) and international multilateral organizations are the main ODA donors of Vietnam, accounted for 62.2% and 37.56%, respectively, of total ODA disbursement for the whole 2010–2017 period [compiled by the author from OECD (2018b)]. However, the *amount of ODA from DAC countries is currently decreasing in proportion to the amount of ODA from multilateral organizations to Vietnam.* The trend of donor partners of Vietnam in the upcoming time seems to be multilateral organizations, not individual countries. Among donors who are multilateral organizations, ODA from IDA accounted for the most significant proportion (24.63% of total ODA for the whole period). However, the proportion of ODA from these organizations is declining as Vietnam has become a middle-income country. In 2010, the percentage of ODA from IDA into Vietnam took up 26% of ODA capital, while in 2016, this figure was only 20% before dropping to 22% in 2017. Asian Development Bank is the second-largest donor in the group of multilateral donors to Vietnam with the proportion of ODA, accounting for 8.57% from 2010 to 2017 [compiled by the author from OECD (2018b)]. ODA from ADB to Vietnam increased sharply from

2010 to 2014 before showing a decreasing trend in recent years. Japan is the biggest donor to Vietnam since the ODA from Japan to Vietnam usually took about 32% of the total. Japan's ODA is not only to help the Vietnamese economy but also to improve physical connectivity within ASEAN to deepen integration, and increase the stability and prosperity of the region (Bobowski, 2019).

The allocation of ODA to economic regions in Vietnam has changed. In the early 2000s, ODA was most distributed to the south, then to the central, and finally to the north of Vietnam. Recently, the allocation of ODA to the central region was the lowest. ODA to the interregional areas has been increasing and accounting for a significant proportion. In 2006–2010, ODA allocated to the inter-region accounted for 54% of the total signed ODA, 7% higher than this share in the 2011–2015 period (Prime Minister, 2016). Hence, the ODA flows are not focused on a specific area but on interregional regions.

ODA can be transferred via *channels such as public sector; nongovernmental organizations and civil society; public–private partnerships; multilateral organizations; teaching institutions, research institutes, and think tanks; private sector institutions; and other organizations*. In Vietnam, 89.56% of ODA is through public sector; 2.8% is through multilateral organizations; 2.41% is through nongovernmental and civil society; 2.27% through other organizations; and 1.7% through teaching institutions, research institutes, and think tanks. Other channels account for less than 0.2% of total ODA. However, it is worth noting that the level of ODA disbursement through the public sector is only 84.66% ODA commitment (the second-lowest among the channels of ODA to Vietnam). The lowest level of expenditure is through multilateral organizations (reaching 72.83% of ODA commitment)[2]. Besides, in terms of ODA channels, 98.86% of ODA loans are through the public sector or, in other words, only the public sector has access to ODA loans. As for ODA grants, 57.56% of ODA grants to Vietnam is via public sector; 12.41% is through multilateral organizations; and 7.8% is through teaching institutions, research institutes, and think tanks [compiled by the author from OECD (2018b)]. Then, Vietnam should pay attention to when setting up schemes to attract ODA.

Based on the implementation goals, ODA projects are allocated into 11 field groups. They are as follows:

- Group 1: Social infrastructure and services
- Group 2: Economic infrastructure and services
- Group 3: Production sectors
- Group 4: Multisector/cross-cutting
- Group 5: Commodity aid/general program assistance
- Group 6: Action relating to debt
- Group 7: Humanitarian aid
- Group 8: Administrative costs of donors
- Group 9: Support to NGOs
- Group 10: Refugees in donor countries
- Group 11: Unallocated/unspecified

From 2010 to 2017, *economic infrastructure and services* accounted for the highest percentage with approximately 15.77 billion USD (taking up 47.6% of total ODA disbursement for the whole period). The second place is *social infrastructure and service with* 9.3 billion USD, accounting for 28.11%. *Multisector/cross-cutting* ranked third with 3.89 billion USD (11.76%) while *production sectors* ranked fourth with 2.67 billion USD (8%) [compiled by the author from OECD (2018b)]. ODA has supported the construction and development of a few key industries and fields in Vietnam, such as *transportation and storage; energy (energy policy, renewable energy, energy distribution policy); water supply and sanitation; education; multisectors; environmental protection; agriculture, forestry, and fishery; government and civil society; medical; budget support; financial and banking services; and manufacturing, mining, and construction.*

However, ODA flows to the *sectors of transportation and* the *energy* are mainly loans with an increasing amount. In 2010, 93.94% of ODA for transportation was ODA loans, and in 2017, this figure rose to 97.95%. Similarly, ODA loans for the energy sector in 2010 and 2017 were 95.57% and 96.73%, respectively. ODA for water supply and sanitation also consisted of 82.62% of ODA loan. As for education, nearly half of the ODA in this field came from ODA grants (47.74%). Environmental protection and the multisector areas both had over 30% of ODA grants.

3 Role of ODA in Economic Infrastructure Development in Vietnam

Infrastructure is the engine for economic growth, so it is the sector that received the most substantial proportion of ODA in Vietnam. This sector includes (1) transportation and storage; (2) communication; (3) energy (policy, renewable energy, nonrenewable energy, thermal power plants, nuclear power plants, energy distribution); (4) banking and financial services; and (5) business and other services.

From 2010 to 2017, *transportation and storage* is the sector that received ODA most (9.76 billion USD in the whole period), followed by *energy* (4.67 billion USD) and *financial services and banking* with 820 million USD. *Business and other services* and *communications* accounted for about 347 million USD and 167 million USD, respectively.

However, similar to the general trend of ODA to Vietnam, the total ODA to the economic infrastructure sector in Vietnam has declined sharply. In 2014, the total ODA disbursement of this sector was more than 2.63 billion USD, decreasing by 44.3% to 1.46 billion USD in 2017 (see Fig.27.2).

Most of the ODA from organizations and countries for Vietnam to build infrastructure is preferential loans with low-interest rates and extended maturity. This demonstrates the great efforts of Vietnam and donors in improving and harmonizing processes, procedures, institutional improvement, skill enhancement at all stages of resource mobilization, and the trust of donors to Vietnam. Among the total ODA

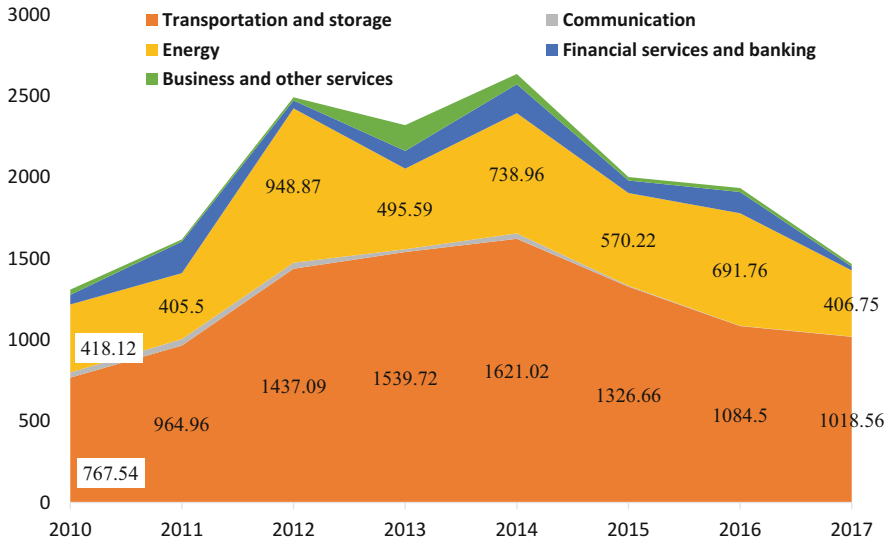

Fig. 27.2 ODA disbursement in economic infrastructure in Vietnam duringthe period 2010–2017 (million US$) (Source: OECD, 2018b)

allocated to the infrastructure sector from 2010 to 2017, 95.4% of which is borrowed from major donor partners like Japan, IDA, ADB, and Korea. Japan is the largest donor with nearly 8.85 billion USD (accounting for 56.1% of total ODA for the infrastructure sector) with almost 8.64 billion USD of ODA loans and 209.8 million USD of ODA grants (the second-largest ODA grants donors). Coming in second is IDA, a World Bank representative that provides preferential loans to developing countries, with approximately 3.3 billion USD (all loans). The third-largest donor is ADB with over 1.15 billion USD of ODA to Vietnam, in which 1.143 billion USD in ODA loans. Australia is the largest donor of ODA grants to Vietnam in the infrastructure sector with nearly 236.8 million USD (Table 27.1).

Because *transport and energy* are the two sectors that receive ODA the most, the next part will further analyze ODA in these two sectors.

3.1 Transportation

Since 1986, Vietnam affirmed that "transportation must be one step ahead of all to meet the development requirements of the national economy." Therefore, transportation has received much supports from ODA.

From 2010 to 2017, total ODA disbursement to transportation and storage reached 9.76 billion USD, accounting for nearly 62% of total ODA disbursement in the infrastructure sector. This capital was mainly allocated to the road transport (6444 million USD, equivalent to 61.89%), followed by rail transport (1378 million

Table 27.1 Top 10 largest ODA donors in the infrastructure sector in the period of 2010–2017 (USD million)

Donors	Total	ODA grants	ODA loans	ODA equity investment
Japan	8847.83	209.80	8638.03	
IDA	3296.66		3296.66	
ADB	1153.83	10.68	1143.16	
South Korea	831.70	21.80	809.90	
France	491.13	4.92	486.22	
Germany	431.86	24.02	361.28	46.56
Australia	236.80	236.80		
European institutions	113.66	3.81	109.85	
Denmark	55.06	43.93		11.13
Norway	52.07	5.09		46.98

Source: Compiled by the author from OECD (2018b)

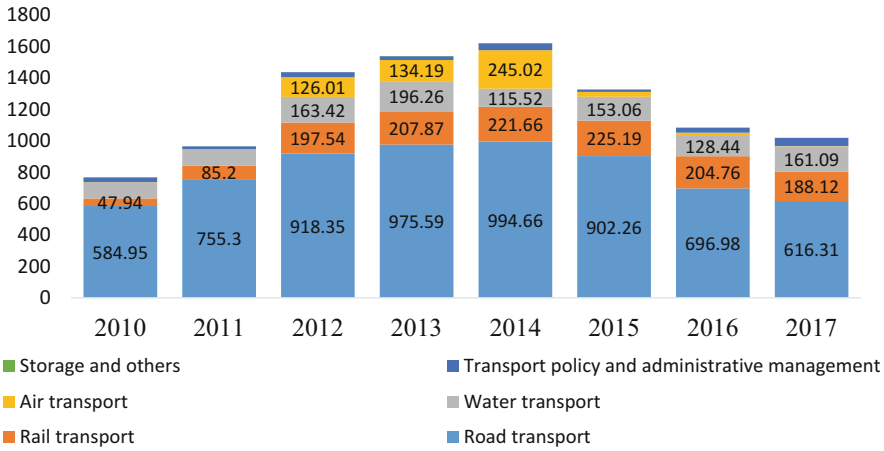

Fig. 27.3 ODA commitment and ODA disbursement structure in the transport and storage sector in the period of 2010–2017 (USD million) (Source: OECD, 2018b)

USD, 14%); water transport (1121 million USD, 11%); and air transport (563 million USD, 6%) (see Fig. 27.3). More than 95% of total ODA for transportation infrastructure was from ODA loans [compiled by the author from OECD (2018b)].

Thanks to ODA capital, the system of roads, railways, inland waterways, seaports, and airways of Vietnam has developed significantly.

For *road infrastructure*, ODA focused on developing and upgrading highway and expressway network, significant bridges, provincial roads, and rural roads. Typical projects are Nhat Tan Bridge Project, Hanoi City Ring Road No. 3 Project from Japanese ODA, and Mekong Delta Transport Infrastructure Development Project from World Bank's ODA. Thanks to ODA, the critical highways on the north–south axis were put into use in 2016. The highway connected the two key economic regions of the north and the south with gateway ports and national border gates,

including Ho Chi Minh City–Trung Luong; Phap Van–Ninh Binh; Lien Khuong–Da Lat; Hanoi City Ring Road No. 3; Thang Long Boulevard; Hanoi–Thai Nguyen; Noi Bai–Lao Cai; Noi Bai–Nhat Tan; Ho Chi Minh City–Dau Giay; and Hanoi–Hai Phong. Vietnam was in the top 3 countries with the most significant and most modern expressways in Southeast Asia (Bidding Newspaper, 2016). Until 2017, Vietnam had had 13 expressways and 146 main national highways with a total length of 23,816 km, mainly asphalt roads (Ministry of Industry and Trade, 2017).

Regarding *railway infrastructure*, ODA focused on the maintenance and development of the north–south railway line. It also helped to build some elevated railway lines in Hanoi and Ho Chi Minh City and a high-speed railway linking the two regions. Moreover, ODA projects upgraded and modernized the signal information system on major railway lines, focused on modern and high pulling power locomotives. Major projects in this field, for example, are Ben Thanh–Suoi Tien Metro Line Project, Ho Chi Minh City Urban Railway Construction Project, and Ben Thanh–Suoi Tien Section. Due to the heavily degraded infrastructure and outdated technology, the demand for investment in the railway sector is enormous, but the budget is too limited, so ODA capital is indispensable. However, in the past few years, ODA attracted to railway sector remained at a low level (only 1.38 billion USD from 2010 to 2017). The main reason is that this sector needs an intensive amount of investment capital. Therefore, it requires co-sponsoring, but each donor has a different point of view and technologies, so reaching a consensus for an investment project is not easy.

On the other hand, difficulties in synchronizing the system between donors and the recipient have a significant impact on the efficiency of ODA's projects. Moreover, for railway infrastructure constructions (except for new invested routes), construction and transport operations often happen at the same time. Therefore, the construction period is long; the cost of ensuring traffic operation is high, and the process of disbursement is slow.

For *air transport infrastructure,* in recent years, airports in Vietnam have been upgraded thanks to the contribution of ODA. Many major investment projects at Noi Bai, Da Nang, and Tan Son Nhat international airport that used ODA are effective and achieve high quality. ODA also contributed to compile training textbooks, and improve the operating skills of high-tech machinery and equipment of aviation officials and employees, to follow international standards through equipment procurement and technology transfer contracts, to facilitate the integration process in the aviation sector.

For *waterways infrastructure,* thanks to ODA, many vital projects in the maritime industry have been built and upgraded. By the end of 2015, Vietnam has improved national and local seaports such as Cai Lan Port, Hai Phong Port, Cua Lo Port, Vung Ang Port, Tien Sa Port, Quy Nhon Port, Nha Trang Port, Saigon Port, and Can Tho port. These seaports had met the demand for goods trade, creating more jobs, and increasing income for labor in rural areas and localities with port facilities. Besides, to facilitate waterway and road transport, thanks to ODA, Cai Mep-Thi Vai Port Project has been carried out to turn it into an international transshipment port.

Besides the above fields, ODA also supports the strengthening of traffic development planning, improving sector management capacity as well as awareness, legal

education, and traffic safety in society. Furthermore, technical assistance projects have contributed to the staff's specialized training for expressway construction in Vietnam, sea and river transport. ODA for these projects is mainly from ODA grants.

Overall, the contribution of ODA to the transportation sector is enormous as it minimized the stress on capital for development investment of the industry. At the same time, the level of science and technology and management skills of each subsector has also been upgraded, gradually approaching international standards. ODA helped to enhance transport capacities such as improving driving speed on roads, shortening running time on railways and inland waterways, increasing the number of goods through ports, improving cargo flow through airports, and satisfying travel needs in Vietnam. Because of this development, Vietnam's logistics service industry is thriving at a rate of 15–16%/year. According to the World Bank LPI Performance Index in 2014 and 2016, Vietnam ranked 53 and 64/160 countries, respectively, ranking fourth among ASEAN countries, after Singapore, Malaysia, and Thailand (Cafef.vn, 2017). According to the Report of the World Economic Forum, Vietnam's transport infrastructure in the period 2010–2015 has increased by 36 steps (from 103 to 67) (Schwab, 2017), but by 2018, it decreased to rank 75th (Vietnam National Assembly, 2018).

Despite the significant contributions from ODA, transport infrastructure has not been developed accordingly with the potential and has not met the demand. Some urban areas are densely populated, especially in big cities such as Hanoi, Ho Chi Minh City. Transport infrastructure still cannot keep up the pace of economic development of the cities, and traffic jams happen frequently. In some remote areas, rural mountainous regions are always difficult to access. Many roads, bridges have been downgraded or severely damaged, but there has not been enough fund to repair or build new ones. The delivery of counterpart funding plan was deficient, which has dramatically affected the implementation progress of the projects, possibly causing complaints and grievances from foreign contractors leading to compensation. This is also one of the reasons for the slow disbursement of ODA compared to the commitment schedule with international donors.

3.2 Energy Sector

Energy is a field that has an essential role in promoting economic development. Therefore, this is also an area that receives a lot of ODA in the economic infrastructure group (only after the transportation sector) in Vietnam. ODA has been instrumental in promoting many renewables and efficiency projects that would possibly have not been implemented in developing countries without these flows (Gomez-Echeverri, 2018).

In the 2010–2017 period, total ODA disbursement to energy sector was 4676 million USD, accounting for 29.65% of total ODA invested in Vietnam's infrastructure. In particular, the most considerable amount of ODA capital is for coal-fired electric power plant construction projects, with over 1.6 billion USD (equivalent to

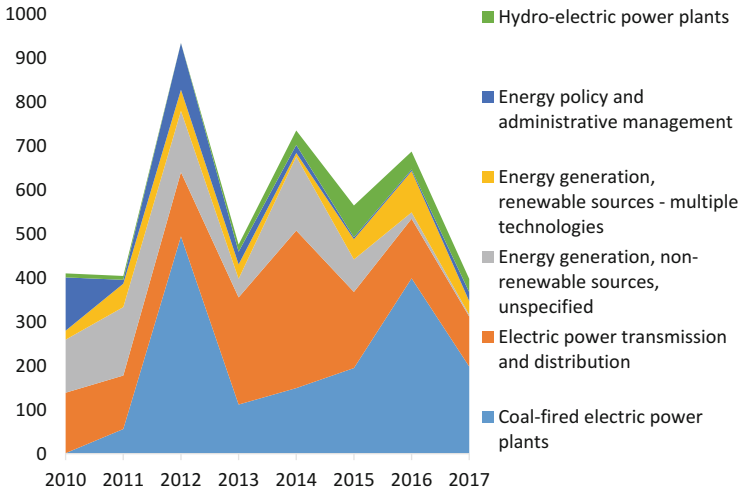

Fig. 27.4 ODA disbursement in the energy sector during the 2010–2017 period (million USD) (Source: OECD, 2018b)

34.31% of ODA values in the energy sector), followed by electric power transmission and distribution projects with nearly 1.43 billion USD (accounting for 30.58%). Projects of energy generation, nonrenewable sources, unspecified from 2010 to 2017 reached 718 million USD of ODA disbursement, equivalent to 15.37%. ODA for energy policy and administrative management projects is relatively high compared to other fields, taking up 6.33% of the total ODA for the energy sector, equivalent to 295.95 million USD. Projects related to hydroelectric power plants reached 210.81 million USD ODA disbursement for the whole period (accounting for 4.51%) (see Fig. 27.4). Besides, ODA for the energy sector has also supported projects for solar energy, wind energy, gas distribution, and biofuel-fired power plants, but the value is still shallow.

ODA for the energy sector mainly comes from Japan (accounting for 52.95% of total ODA for the whole industry), from World Bank through IDA (29.26%), from Germany (7.8%), from ADB (3.6%), and from France (3%). However, due to the different funding priorities, the ODA forms of these donors also have a different structure. For example, IDA signed ODA loans for electric power transmission and distribution projects and energy policy and administrative management primarily. With Japan, they often provided ODA loans for electronic power transmission and distribution, energy generation, and nonrenewable sources. While France provided their ODA to hydroelectric power plant projects, Germany often focused on electric power transmission and distribution projects. Besides, it also offered ODA for energy generation and renewable sources.

The projects of coal-fired electric power plants, electronic power transmission and distribution, hydroelectric power plants and energy generation, and nonrenewable sources were 98% ODA loans. Meanwhile, projects related to energy

conservation, energy education/training, energy research, wind power, natural gas-fired electric power plants, and nuclear energy electric power plants were 100% of ODA grants. Projects related to solar energy had 25% ODA grants. In the future, Vietnam needs to pay attention to have a more rational strategy for using ODA to ensure energy supply in the long run. The plan needs not to affect the environment and reduces greenhouse gas emissions.

Some projects with significant disbursed capital in the period of 2010–2017 are Thai Binh Thermal Power Plant and Transmission Line Construction Project with a total investment of approximately 26,584 billion VND (EVN, 2019). Japan's first ODA loan package for this project was worth 20,737 billion Yen (loan agreement signed in November 2009). The second loan package was 36,392 billion Yen (loan agreement signed in January 2015). The third loan package was worth 9873 billion Yen (loan agreement signed in July 2015). The fourth loan package was worth 54,982 billion Yen (VietnamEnergy.vn, 2016). After 4 years of construction and x installation of equipment, both units of the plant came into commercial operation in April 2018. On February 14, 2019, EVN held the inaugural ceremony of the Thai Binh Thermal Power Plant. The project has been evaluated to ensure quality and meet environmental regulations. The plant strengthened the power supply capacity in the Red River Delta, which improved the level of safety, stability, and economic efficiency of the electricity system's operation. Each year, the plant would generate 3.6 to 3.9 billion kWh of electricity for the national grid (EVN, 2019).

Another significant project aided by Japan was Nghi Son Thermal Power Plant I. The project started in July 2010 with a total investment of nearly 22,260 billion VND, of which 85% were ODA loans from Japan and 15% from Vietnam Electricity (EVN). After 3 years of active construction and installation of equipment, the plant officially joined the national grid on October 7, 2013, with the annual electricity production of 3.6 billion KWh (Vietnam Financial Time, 2013). The plant ensures supply of electricity for production in Nghi Son Economic Zone and meets the needs of socioeconomic development of Thanh Hoa Province in particular and the North Central region in general.

Besides, the World Bank (through IDA) also cooperated with EVN to implement the Distribution Efficiency Project (DEP) from 2013 to 2016. It is the largest power project of EVN with a total initial investment of about 724.8 million USD, of which ODA was 488.9 million USD (EVN, 2012). The project also received funds from the International Development Association (IDA), the Clean Technology Fund (CTF), and the Australian Agency for International Development (AusAid). The total fund was approximately 665 million USD in total (EVN, 2016). The project was implemented by five power corporations, namely Northern Power Corporation, Central Power Corporation, Southern Power Corporation, Hanoi Power Corporation, and Ho Chi Minh City Power Corporation. It aimed to improve the efficiency, supply capacity, and reliability of the power distribution system through upgrading, expanding, and modernizing the 110KV distribution grid, medium–low voltage, and meter system.

Thanks to the support of ODA, by the end of March 2018, the national power transmission system managed by EVNNPT has had a total of 24,365 km of lines

(including 7503 km of 500 kV lines and 16,862 km of 220 kV lines) and 140 electrical substations (including 28,500 kV electrical substations and 112,220 kV electrical substations) with a total capacity of 77,613 MVA. The national electricity transmission system has reached most provinces and cities in Vietnam, gradually connected with the electricity transmission grids of other countries in the region, with modern technologies such as multicircuit and multivoltage transmission lines, 220 kV high-voltage underground cables, 220 kV GIS stations, unmanned substations, computer-integrated control systems, fault locators, online oil monitoring, and SCADA systems. (Baochinhphu.vn, 2018).

Vietnam's energy development is on the right track, but it is a complex area that requires more resources to develop the energy market. ODA and concessional loans have been used effectively, reflected in the development of electrical systems through power sources, transmission grids, distribution grids, improving reliability, and safety of operation system. The projects have improved electricity industry, contributing significantly to economic growth, and living standard's improvement. Although the implementation and disbursement of ODA programs and projects and concessional loans have had positive changes, it is still slower than expected. Many projects are still unsold and disbursed slowly. The disbursement speed in each year also remains uneven with the level of commitment.

4 Conclusions

From the analysis of the current status of ODA capital to Vietnam, after Vietnam became a middle-income country in 2010, especially ODA capital to economic infrastructure sector, it can be seen that:

Firstly, ODA is not a concessional forever, especially in the case of Vietnam. Vietnam has less than three years to receive preferential loans from IDA. Therefore, Vietnam needs to use ODA capital wisely to support socioeconomic development and poverty reduction. Donors of ODA will adjust aid level gradually, giving funds to poorer countries. There is a big challenge for the transport sector due to a tight budget and limited resources from the private sector.

Secondly, because Vietnam has become a middle-income country, ODA to Vietnam is mainly ODA loans with less favorable conditions and approaching market conditions. Therefore, Vietnam needs to have a clear plan when it comes to ODA loans because this funding often comes with donor constraints and creates debt burden later on. Currently, the debt burden that ODA has created is getting larger, accounting for nearly a quarter of the total ODA disbursement [compiled by the author from OECD (2018b)].

Thirdly, ODA to the social and economic infrastructure sector has contributed significantly to helping Vietnam achieve the millennium objectives in 2015. However, it is also the cause of ODA debt burden of Vietnam. ODA capital into transportation and energy was more than 95% ODA loans, while projects in these two sectors often have long-time construction time and low progress. Many of which

Table 27.2 Large-scale ODA projects that exceed the fund

Name of the project	Donors	Total initial investment (billion VND)	Amount after adjustment (billion VND)
Hanoi City Urban Railway Construction Project: Nam Thang Long—Tran Hung Dao Section (Line 2) (VnEconomy, 2018)	Japan (JICA's ODA loan was about VND 30.5 trillion VND)	19,555	35,679
HCMC Urban Railway Construction Project (Ben Thanh—Tham Luong Section (Line 2) (VnExpress.net, 2019)	German development Bank (313 million USD), ADB (540 million USD), European Investment Bank (195 million USD)	26,116	47,603
Hanoi Urban Railway Construction Project, Cat Linh—Ha Dong route (Traffic Newspaper, 2018)	China (China's ODA loan was 13.87 trillion VND)	8,769	18,000
Ho Chi Minh City Urban Railway Construction Project, Ben Thanh—Suoi Tien Section (Line 1) (News Zing.vn, 2019)	Japan (Japanese ODA accounted for 88.4%)	17,387	47,325
Ha Noi Metro Rail System Project, Line 3-Nhon-Ha Noi Railway Station(Legal and Social Electronic Newspaper, 2017)	France, ADB, EIB (total ODA loans by donors are 1 billion USD)	20,625	30,977

Source: Compiled by the author

projects exceeded the fund, thus making it challenging to repay ODA loans (see Table 27.2). ODA is mainly from Japan and IDA, but IDA loans will no longer receive preferential treatment since Vietnam has met ODA graduation conditions.

ODA can be an effective investment when a recipient country's economic policies are sound before aid is provided (Burnside & Dollar, 1997). Then, Vietnam needs to have effective and rational policies in managing ODA. There is not much time left for Vietnam's official ODA graduation. Loan conditions of partners will be increasingly difficult and will continuously change toward market interest rates. For example, the Asian Development Bank (ADB) ranked Vietnam in the B category from 31/12/2018 (blend). From January 1, 2019, Vietnam will be ineligible to access ADB's emergency assistance capital with a 40-year loan term, a 10-year grace period, and an interest rate of 1% per year. Instead, Vietnam will be subjected to the 6-month LIBOR interest rate with adjustment.

Besides, nowadays, there is still no consensus from international donors on whether ODA works in future (Naciri, 2018) and there is no one policy driver but many, varying from one aid-providing country to another, and over time from one government to the next (Stokke, 2019). Moreover, many DAC countries are

beginning to increase their commercial interests through development assistance as emerging donors (Ogawa, 2018). These are significant challenges for Vietnam.

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Chapter 28
Relationship Between Organizational and Employee Work Innovation: Mediation Role of Brand Support Behavior and Psychological Capital (Hotels in Khanh Hoa Province, Vietnam)

Pham Hong Liem and Nguyen Xuan Lan

Abstract The World Bank has warned that Vietnam's tourism industry should focus on improving the quality and value of products and services as well as maintaining skilled and capable human resources to cope with the "tipping point" of the tourism. Employee work innovation is considered a solution to balance the benefits between service providers and customers. In addition, building an organizational climate to promote positive behavior of employees is an interesting research topic for both practical and academics. Samples were primarily obtained from hotels and resorts in Khanh Hoa Province, Vietnam. Through a multilevel integrated research model, study results have explored the mediation mechanism of brand support behavior and psychological capital in the relationship between organizational climate and employee work innovation, thus explaining the influence of organizational climate on employee work innovation in the accommodation sector. This study suggests implications for managers in improving the organizational climate to form positive attitudes and behaviors of employees, thereby contributing to the sustainable development of the hospitality industry.

Keywords Organizational climate · Employee work innovation · Brand support behavior · Psychological capital · Hotels and resorts

P. H. Liem (✉)
University of Khanh Hoa, Khanh Hoa, Vietnam
e-mail: phamhongliem@ukh.edu.vn

N. X. Lan
University of Economics, Da Nang University, Da Nang, Vietnam

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1 Introduction

Service branding is considered to be a small tangible factor for the customer's identity and expectations (Berry et al., 2006) as well as their perception of the business and service of the business (Prasad & Dev, 2000). In hospitality industry, when the difference is always the top search element of the visitors, the flexibility and skills of the staff are the main factors that make the difference and increase the satisfaction of customer. As a result, hospitality providers are expected to have talented, capable, and mature employees who can anticipate, perceive, understand, analyze, and respond to their needs quickly.

Improving the organizational climate helps employees achieve a positive psychological state and promote brand support behavior, and innovation of employee is an important research topic for both academics and practitioners. Research has shown that organizational culture, especially work environment factors such as encouraging the dynamics, creativity, and professionalism of employees, has a positive influence on brand support behavior, increases the satisfaction, and promotes the return (Ayupp & Chung, 2010). In addition, close relationships and interaction among employees also contribute to the formation of positive behaviors such as brand support (Punjaisri et al., 2009). However, the factors that drive branding behavior and the psychological mechanisms underlying such behavior have not been properly addressed and there is a lack of quantitative evidence (Helm et al., 2015). The relationships between psychological capital and brand support behavior with work innovation of staffs and the organizational climate are relatively new, and no research has been found in Vietnam.

In the field of travel services, when the difference is always the top search element of the travelers, the flexibility and skills of the staff are the main factors that make the differences and increase the satisfactions of customers. As a result, the hospitality industry always wants to have employees who are talented, capable, and thriving at work because they can anticipate, recognize, understand, analyze, and meet the needs of their clients in the fastest. Innovation can be considered an appropriate solution to balance the interests of customers and service providers. Therefore, the theoretical and practical issues of the employee work innovation need to be discovered more.

In addition, the current trend of tourists' consumption is to explore, toward high-class services, and to have a valuable vacation, adding to the pressure on service delivery. This requires employees not only good at the profession, but also must have the bravery and psychology to be able to overcome challenges at work. This view has been addressed by Etebarian et al. (2012), and Sharifi and Shahtalebi (2014).

This study investigates the impact of work environment cultural factors on psychological capital and brand support behavior, thereby stimulating work innovation of workers in hotels and resorts at Khanh Hoa Province, Vietnam. In this area, employees play a critical role in providing services that ensure brand commitment to customers. This research, therefore, gives an account of the key factors that shape the

advanced and competitive organizational climate of affiliation, fairness, and innovativeness (Bock et al., 2005; Porter, 2008), and explore their role in shaping positive psychological capital, branding support behavior, and work innovation of employee. These findings enhance our understanding of the organizational climate and increasing the brand image of the organization (Herrera et al., 2011). The structural equation modeling (SEM) model was conducted to evaluate the hypotheses, based on survey data of different staff groups from 50 hotels and resorts in Khanh Hoa Province, Vietnam. Tourism business is a type of service, based on different norms and characteristics, suitable to the culture and tourism resources. Therefore, this research context is expected to provide an interesting perspective on the research phenomenon.

2 Methodology

2.1 Theoretical Background

2.1.1 Employee Work Innovation

Innovation, which is referred to the development and implementation of new ideas, was well known defined from the previous researches. One of the first scholars to address innovation in the workplace of workers with a multistage process is Scott and Bruce (1994). Innovation is activities such as detecting emerging problems, formulating new and useful ideas or/and solutions, preparing resources and planning action, and applying ideas to practice. In that trend, some later scholars have also developed constructs and multidimensional scales of innovation in their researches (De Jong & Den Hartog, 2010).

In this study, innovation in the work of workers is based on the views of some scholars (e.g., Scott & Bruce, 1994; Janssen, 2000; Carmeli & Spreitzer, 2009; Yuan & Woodman, 2010), and it is the employee's autonomy in forming, developing, and applying new processes, methods, or products to improve performance and achieve benefits for individuals, groups, or organizations.

Personally, innovation in the workplace is an individual's activity in initiating and proactively introducing new or/and useful ideas, processes, products, or mechanisms. However, because innovation is characterized by intermittent activities rather than sequential stages, workers can participate in this activity at any time. Employee innovation is the foundation for the company's efforts to renew its business in the creation of new products and services (Janssen, 2000). In service, employee–customer interaction is a critical factor promoting employee innovation (Michael et al., 2011). In this study, we focus on the employee work innovation and consider it a multistage process, not consider each of the concepts of innovation and multidirectional scale.

2.1.2 Brand Supporting Behavior

The attitude and behavior of employees play a very important role in conveying the brand image in the service, both positive and negative, from protection to undermining organizational brand. It is they who transfer brand identity into the minds of consumers (Wangenheim et al., 2007). Therefore, service employees not only understand what the brand stands for, but also more importantly act to support or build the brand, as well as fulfill the brand promise. Without these actions, negative consequences can occur, creating bad brand image in the minds of stakeholders (Miles & Mangold, 2004).

Today, brand supporting behavior is important because it has a positive impact on the branding of hotels and resorts (Burmann et al., 2009). In the process of providing services, customer requests (feedback) should be considered as the basis for regulating employee behaviors. And employees' brand supporting behavior is evident to customers to evaluate the quality of hotel services (King, 2010). The studies also provide evidence that brand supporting behaviors have a positive influence on hotel brands, as well as employee performance (Baker et al., 2014). The next hypothesis is proposed:

H1: Brand supporting behavior positively affects employee work innovation.

2.1.3 Psychological Capital

Psychological capital is considered to have an important influence on the behavior and work efficiency of the individual (Luthans et al., 2005). Moreover, psychological capital does not attract as much attention, especially as an intermediary role in theoretical research (Qadeer & Jaffery, 2014).

Service providers can make a difference not only through a system of individual service standards but also with a competent team of employees. A psychological capital will work harder, and have a safe work environment, have the opportunity to develop their career, and develop their capacity (Nafei, 2015). This finding is supported by Kumar and Uzkurt (2010) who reveal that employees with high self-esteem are creative and tend to develop into innovative behaviors. On the other hand, Avey et al. (2011) suggest that psychological capital has a significant impact on attitudes, actions, and work efficiency. From this theoretical basis, further hypotheses are given:

H2: Psychological capital positively affects employee work innovation.

2.1.4 Organizational Climate

In this study, the organizational climate can be defined as a relatively enduring characteristic of an organization, which distinguishes it from other organizations and embodies members collective perceptions about their organization concerning such dimensions as autonomy, trust, cohesiveness, support, recognition, innovation, and fairness (Moran & Volkwein, 1992, p. 20). The employee's perceptions about their organization can be grouped into three categories:

1. Affiliation (the perception of social norms),
2. Fairness (the perception of trustworthiness), and.
3. Innovativeness (the organizational practices accept failure, transparent information, and free publicity) (Bock et al., 2005).

Innovation facilitators can be found in different levels such as organizational, team, job, individual-level factors, and climate environmental factors. Furthermore, employee individuality can be affected by environmental factors. So, there is a need for better understanding of its relationship with employee outcomes (Luthans et al., 2008).

Besides, Kim and Ko (2014) provide evidence that such an appropriate organizational environment will promote knowledge sharing among employees, as well as increase the satisfaction and commitment to the organization, and develop their capacity, thereby improving the efficiency of the work of employees (Sheikhepoor & Sheikhepoor, 2015).

In addition, positive working environment will help employees to find happiness in their work, thereby increasing brand supporting behavior (Punjaisri & Wilson, 2011). Besides, Shahnawaz and Jafri's (2009) study has also shown that the organizational environment is important in identifying employee psychological capital. Hence, we expect that:

H3: Organizational climate positively affects employee brand supporting behavior.
H4: Organizational climate positively affects employee psychological capital.

2.1.5 Brand Supporting Behavior and Psychological Capital as Mediators

As mentioned, brand supporting behavior and psychological capital are factors to increase innovation in the work of employees in the organization. Brand support behaviors help ensure the quality of service. Psychological capital is a psychological state that helps shape positive behaviors of workers. Therefore, the mediating role of brand supporting behavior and psychological capital is quite significant in current research. The combination of psychological capital and brand supporting behavior with innovation has broadened our perspective on the importance of these factors. Innovation at work is the basis for an organization's productivity and efficiency.

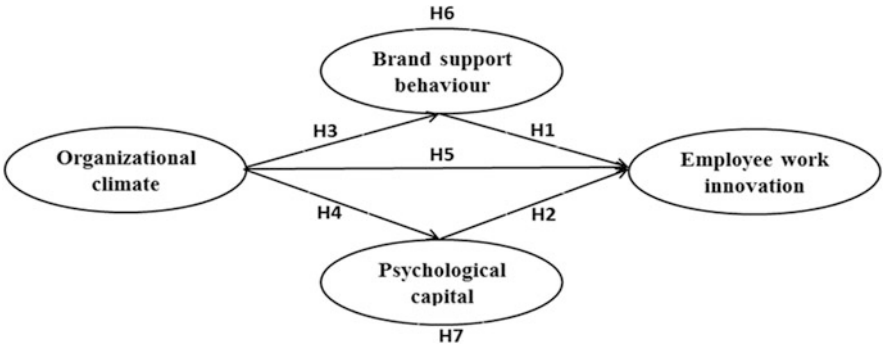

Fig. 28.1 Theoretical Model

Because they share the same goals, workers will share their creative ideas with colleagues and supervisors and work together. The sharing of knowledge, as well as the interaction between employees, has increased the behavior and innovation capacity in their work, as well as in the service sector (Hu, 2009).

For an organization to develop the innovation process stably, organizations need to build and develop an organizational environment in which employee creativity must be encouraged and implemented. From there, the organization can spread a good brand image to its customers. In other words, the organizational climate plays an important role in increasing learning capacity, professional skills, and problem-solving and innovation. Therefore, variables brand supporting behavior and psychological capital are likely to act as intermediaries. The next hypotheses are proposed:

H5: Organizational climate positively affects employee work innovation.
H6: Brand supporting behavior mediates the relationship between organizational climate and employee work innovation.
H7: Psychological capital mediates the relationship between organizational climate and employee work innovation (Fig. 28.1).

2.2 Methodology

The search for related documents is done first. In line with the context of study in Khanh Hoa Province, Vietnam, the items that make up the scale are calibrated according to experts' input. They are lecturers or administrators in the hospitality industry. From there, form a draft scale. This study works on a survey method, using a questionnaire to check the conceptual model and developed hypotheses. A quantitative preliminary study was conducted with 30 questionnaires surveying employees working in the hotels and resorts. The results show the relevance of the content of the concepts. The official study was conducted with 361 valid records

(from 390 records) collected from May 2016 to February 2017 at hotels and resorts in Khanh Hoa Province, Vietnam.

To measure the various constructs, validated items were adapted from prior studies. Specifically, following Bock et al. (2005), the organizational climate is measured based on three proxies such as brand support behavior (Punjaisri et al., 2009), 13 items of the psychological capital (Block & Kremen, 1996; Carver & Scheier, 2002; Parker, 1998; Snyder et al., 2002), and employee work innovation (Scott & Bruce, 1994) inherited from previous studies using a five-point Likert scale, with a rating scale from (1) "strongly disagree" to (5) "strongly agree." To create the measurement, a group interview was conducted with 10 experts in hotels and resorts. The content of each item is discussed. As a result, all items of the scales were retained in the study. Moreover, in line with the research context in Vietnam, the items were adjusted according to expert opinion, through in-depth interviews. All expert opinions are recorded. Finally, adding or decreasing or using the appropriate word for each item is decided by the majority of experts. Preliminary research was conducted with 30 samples to examine and adjust the scales. The results show that the scales are reliable with a value that exceeds the minimum threshold of 0.60 for commonly used scales (Hair et al., 2010).

3 Results

3.1 Correlation Analysis

Table 28.1 shows the correlation between the research constructs: organizational climate (OC), brand supporting behavior (BS), psychological capital (PC), and employee work innovation (WI). The results shown in the correlation matrix provided the initial data supporting the proposed hypotheses. Specifically, the correlation coefficients indicate a significant relationship between brand supporting behavior and employee work innovation ($r = 0.406$), psychological capital and employee work innovation ($r = 0.592$, $p < 0.1$), organizational climate and brand supporting behavior ($r = 0.670$, $p < 0.1$) and psychological capital ($r = 0.495$, $p < 0.1$), and organizational climate and employee work innovation ($r = 0.434$, $p < 0.01$). These coefficients are in accordance with the hypotheses H1, H2, H3, H4, and H5, respectively.

Table 28.1 Correlation coefficients for pairs of variables

Constructs	OC	BS	PC	WI
Organizational climate (OC)	–			
Brand supporting behavior (BS)	0.670	–		
Psychological capital (PC)	0.495	0.419	–	
Employee work innovation (WI)	0.434	0.406	0.592	–

Note: Correlations are statistically significant at 5%

3.2 Evaluate Structural Relationships and Test Hypotheses

The results of model testing by SEM show the fit of the model with data (CFI = 0.970, TLI = 0.968, GFI = 0.927, RMSEA = 0.031). Accordingly, organizational climate has positive influence on both psychological capital and brand support behavior. And next, both organizational climate and brand loyalty have positive influence on brand support behavior. Next, psychological capital and brand support behavior have positive influences on employee work innovation (see Table 28.2). Thus, hypotheses H1, H2, H3, and H4 are supported.

To test the mediation role of BS (PC) for the relationship between organizational climate and employee work innovation (H6, H7), the research using Baron and Kenny's (1986) mediation test requires:

1. The independent variable (organizational climate) to predict the dependent variable (the innovation in the work of the employee) and the mediation variable (brand supporting behavior and psychological capital).
2. The mediation variable must also predict the dependent variable, and.
3. The relationship between the independent variable (organizational climate) and the dependent variable (employee work innovation) will decrease with the control participation of the mediation variable (brand supporting behavior and psychological capital).

Results from Tables 28.1 and 28.2 show the relationship between OC and WI, between OC and BS, and between OC and PC. Thus, the first condition (1) is satisfied. Next, BS and PC also have a positive influence on WI, so the second condition (2) is satisfied. And finally, when there is concurrent involvement of the mediation variable (BS and PS), the relationship between OC and WI is insignificant ($p = 0.281$). So the third condition (3) is also satisfied. This implies that, when employees are working in the appropriate organizational climate, they will form a positive psychological state and thrive at work, thereby increasing innovation in the workplace. Thus, hypotheses H6 and H7 are supported.

Table 28.2 Result of verifying relationship between concepts

Relationship			Hypothesis	Path coefficient (standardized)	*P*-value	Result
BS	–>	WI	H1	0.152	0.021	Accept
PC	–>	WI	H2	0.486	0.000	Accept
OC	–>	BS	H3	0.685	0.000	Accept
OC	–>	PC	H4	0.524	0.000	Accept
OC	–>	WI	H5	0.089	0.281	Reject

Chi-square = 765.954; df = 483; TLI = 0.968; CFI = 0.970; GFI = 0.927; RMSEA = 0.031

4 Conclusion and Discussion

This study is an attempt to propose implications for human resource management for the sustainable development of hospitality industry. This is an interesting study considering the impact of the organizational environment on brand and psychological support. As a result, it is the employee work innovation in hotels and resorts in Khanh Hoa Province, Vietnam.

The research results have shown the importance of learning, as well as perseverance and determination in the work of employees working in the field of tourism. The experiences they have gained from that will help them have the capacity to proactively identify and face all obstacles, find appropriate solutions, and seize opportunities in situations. On that basis, get the right ideas. This is especially important when businesses are facing challenges in the period of strong integration of Vietnam today. Therefore, determining the factors that create the passion and the working capacity of workers are always concerned by tourism businesses.

The research results have contributed to the direction of action for managers when pointing out the role of brand support and psychological capital for innovation in the work of workers.

Specifically, employees who believe in their goals, have optimism in all situations, stand up after failure, and believe in themselves are important resources that businesses can leverage to can make breakthroughs. This result is also consistent with the research of Nguyễn (2014) on the positive effect of psychological capital on employee efforts, which is a key factor to create a competitive advantage for businesses, creating work efficiency (Spreitzer et al., 2005), and discover and find new solutions (Niessen et al., 2012).

Moreover, this study contributes to a better understanding of employee work innovation by exploring how workers become more innovative at work. In the service sector, innovation plays an important role in today's business environment. And this research has made certain contributions in theory and practice.

To the best of our knowledge, this is the first paper that examined the relationship between organizational climate, brand support behavior, psychological capital, and innovation in the Vietnam hospitality industry. Moreover, there have been no studies examining the intermediary mechanism of brand support behavior and psychological capital in the relationship between organizational climate and employee work innovation in this field.

Studies can contribute to the field of organizational behavior in a variety of ways. Our research shows that psychological capital and brand support behaviors are important mediating factors in promoting innovation at work. Moreover, the results of the analysis of the intermediary mechanism have brought about a better understanding of the formation and development of employees' supportive brand and positive psychological state, which leads to an increase in innovation at work.

Along with the theoretical contribution, our research provides practical implications for managers and researchers. That is, when employees have a positive state of mind, they will be more thriving at work, thereby increasing innovation at work. The

findings of our study also indicate that when organizations focus more on the mental health of workers, they will have the energy to learn, accumulate more knowledge, and increase their positive behavior. So it leads to employee's working innovation. This is a reliable basis for the appropriate decisions of the administrator in each stage of the organization's development.

Integration brings opportunities and challenges not only for businesses but also for employees. The workforce today is not merely concerned with job satisfaction, but more. It is a work environment that can energize, revitalize them, and form positive behaviors.

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Chapter 29
Improving the Managerial Performance in the Context of Financial Autonomy: An Empirical Investigation in Public Education Sector

Quang Huy Pham and Kien Phuc Vu

Abstract With the purpose of contributing to a greater awareness of managerial performance (MP) in public education sector (PES), we hypothesize the way in which the MP in PES is being affected by its determinants, identify the relationships between the parameters affecting MP, and analyze multiple interactions between them through construction of structural equation model (SEM) based on a sample of 412 accountants working in PES in Vinh Long Province. The results indicate that the MP in PES depends significantly on effective management accountant (EMA), strategic leadership (SL), and management stakeholder (MS) and is controlled by financial autonomy (FA). These findings also provide important implications, both for practice and for policymaker.

Keywords Managerial performance · Financial autonomy · Management accountant · Public education sector

1 Introduction

Managerial performance (MP) was acknowledged as one of the most outstanding keys, which was claimed to be improved all the time as it is an indicator of the accomplishment of managers to identify target (Zenita et al., 2015). There has been a growing body of literature, which has addressed the type for this subject on variegated aspects. Previous studies have indicated the impact of the knowledge for managing cost on the relationship between budgetary participation and MP (Agbejule & Saarikoski, 2006), the perception of responses of personalized managers to the utilizing of the controllability proposition, and especially the inherent

Q. H. Pham (✉) · K. P. Vu
University of Economics Ho Chi Minh City, Ho Chi Minh City, Vietnam
e-mail: pquanghuy@ueh.edu.vn

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negative impact of nonapplication on MP (Burkert et al., 2011), and core competencies were more critical for top managers and less important for middle managers and line managers in determining MP (Bucur, 2013).

Besides, MP was still influenced by the behavior of the individuals related to budgeting preparation and self-efficacy in strategic management accounting information use (Zenita et al., 2015). In exploration of the determinants of MP, Rodan (2010) concluded that freshness plays a significant position in connecting network structure and network content to performance in these five theoretical causal motors namely competition, opportunity recognition, information brokering, autonomy, and innovativeness.

Surprisingly, there has been lack of investigation conducted on MP in the sector of public area, especially in PES although education plays a basic role in future of nations (Jalaliyoon & Taherdoost, 2012) and public schools have long been acknowledged as important sectors for the economic stability and global employment. In addition, with the aim at ameliorating the efficiency and effectiveness of schooling, enhanced autonomy for school sites was supposed to be the motility for school improvement. The perspectives of enhanced school autonomy, assessment, and accountability inaugurate in the 1990s have created a new method to school governance (van Amelsvoort & Scheerens, 1997).

Therefore, the studies on educational field have developed increasing awareness of measures of school governance, especially in the context of school autonomy. Nevertheless, much of the recent literature has still kept on exploring on conventional configuration (Overman et al., 2014) or human capital autonomy (i.e., Bach, 2014). Numerous researches have focused on FA in the circumstances of Western countries (Verhoest et al., 2010), while the practices of FA in organizations from developing regions have suffered from the limitation of the number of studies.

In response to the requirement for more research investigation on the MP of PES, this study intends to present a better understanding on the determinants of MP in the context of FA. Our contributions lie in construction of SEM based on a sample of 412 accountants working in PES in Vinh Long Province. Besides, through empirical testing results, the determinants, which were proved to have significant impact on MP, also made a remarkable contribution to the practitioners and policymakers as reference basis. Therefore, in this study, we attempt to bridge these above-mentioned gaps through addressing following formulated research questions:

RQ1: What factors will significantly impact to MP of Vinh Long public schools under the control of FA? How far do they impact?

RQ2: Is there any difference about the impact of factors to MP of Vinh Long public schools under different levels of FA? Does the level of FA change the impact of factors to MP?

RQ3: How to improve the MP of Vinh Long public schools in the context of FA?

Based on these aforementioned discussions, the residual of research is structured in detail as follows. In second part, we provide insights into the primarily academic inputs underpinning the research. The next section highlights the main constructs and presents a set of hypotheses. A discussion about the methods employed in this

study is then described in detail. Our main episode emphasizing the result of SEM for MP is provided in Sect. 5. The last section is ended with summarizing some concluding remarks, comments on limitations, and directions for future research.

2 Theoretical Background

2.1 Public School

In Vietnam, the management and regulation of the educational system are the governmental responsibility. The scheme of country's education encompasses education from preschool to higher education. Nursery, primary, secondary, and high schools depend on local governments. With the diversity of level in education systems and numerous schools, most of the regions in the country are caused a much more constrains to the government budget. In addition, the Ministry of Education conducts a system of centralized administration whose structure is divided into various hierarchical levels. Therefore, running the operation of educational institutions like schools is not easy to undertake due to the involvement of stakeholders at various levels and with divergent interests and precedence, especially the significant dependence on the budget provision for current operation.

This also leads to limitation in the optimization of the manpower and material resources to accomplish goals in increasing school management; thus, to effectively handle the schools' performance, one aspect in the most important things, which is worth encapsulating comprehensively, is administration. Hence, the idea of transferring powers to the educational institutions of the government is increasingly recognized and advocated. Generally, autonomy expresses the grade of selections that an organization might address (Verhoest et al., 2010) in undertaking sources through its own rules and discretion.

As such, school autonomy was identified as decentralization of force through removing power designs from central or regional offices to school sites to allow school-related personnel to have their particular outcomes on source utilization and school operations in a quickly changing academic environment. There were two types of autonomy for bureau namely policy and managerial autonomy (Verhoest et al., 2004). Whereas the policy autonomy aspect focuses on uncontrolled discretion in policy execution, management autonomy deals with the deputation of managerial activities.

Moreover, management autonomy contained organizational, human resources, and FA. Of these, FA has been revealed as a level of judgmental power over agency finances' independent funding, and the decentralization of financial powers among the functionaries. FA applied to its elasticity to get up fiscal resources and utilize them for agency works (Verhoest et al., 2010). In line with the global economic trend, Vietnamese decision preparers have searched for ways to enhance the fiscal performance together with efficiency of the Vietnamese education, the introduction of the Decree No. 16/2015/ND-CP in 2015, which replaced the Decree No. 43/2006/

ND-CP promulgated in 2006, is one of the most prominent changes consisting new contents to consolidate these autonomies in organizing, staffs and financial mechanism and self-responsibility, intends to boost rival between public schools and in order to release untapped efficiency possible.

2.2 Managerial Performance

Performance of the entities tends to enhance significantly only as executives employ for allocating sources. Thus, the rationals of adequate resource for the subordinates would get more rewarding performance of the subordinates (Fisher et al., 2002). MP would be the output of the action undertaken by each of personal fellows in the entity through activities of management namely arrangement, inquiry, coordination, monitoring, staffing, debate, and illustration (Wong-On-Wing et al., 2010). As such, MP demonstrated additionally a capacity of a director working performance in managerial position for actions like their major duty (Anthony & Govindarajan, 2001).

2.3 Foundation Theory Used in Research

2.3.1 The Contingency Theory

Contingency theory, which was discovered in 1950 through the leadership behavior research developed from the sociological functionalist theories of organization structure, was carried out by Chenhall (2003). Since contingency theory explored the behavioral aspect of an organization to elucidate how contingent factors namely culture, technology, and external environment had a dramatic influence on organizations' designing and functioning (Ferreira & Otley, 2005), it was defined as an important field of research in management accounting (Cadez & Guilding, 2008) and organizational measurement and subunit measurement.

2.3.2 The Stakeholder Theory

With the first appearance in 1963 in the memorandum at the Stanford Research Institute, the "stakeholder"concept was then recommended to be adopted by managers (Freeman, 1984). Stakeholder theory was first explained in the seminal work of Freeman (1984) and experienced extensive evolution in the 1990s through the works of numerous researchers. The adoption of stakeholder theory will give the organization a better chance to improve and enhance the matters concerned to more value for related individuals together with management of the circulation of that valuable point (Freeman, 1984).

3 Hypothesis Development and Research Model

Internal control: The definition of IC involves in a series of effective actions as that term has been established into the organization's structure, essential mechanisms' provision in order to assist comprehend threats in the situation of the firm's objectives, taking for granted achievement of objectives, and minimizing the risk of failure. Therefore, the IC structure has been reckoned as the controlling tool that sets out for attaining operating goals, precluding waste, or defalcation of resources (Nogueira & Jorge, 2017). In other words, the objectives of the organization can be accomplished through better control activities, which are all essential actions that should be undertaken with the target to address risks (Saidu & Zabedah, 2013). To be more precise, the management accountants can make a report about different operations in which extent patterns and causes of fraud, RM, fraud prevention, specifying fraud, and responding to fraud in detail (Chartered Institute of Management Accountants, 2002).

H1: Internal control has a positive significant impact on effective management accountant.

Risk management: RM is defined as a whole process of specifying, running, and checking information system-related threats including risk assessment; cost and award interpretation; and the choice, test, accomplishment, test, and security assessment of safeguards. Management accountants play significant role in developing and implementing RM and IC systems within their organizations (Chartered Institute of Management Accountants, 2002) since their knowledge on what drives shareholder value in both monetary and nonmonetary terms could likely produce valuable data to assist their entities to define, track, and control various classes for threats. In particular, some offering of managerial accountants can create to manage risks namely lawful and compliance, staff-related, market price, liquidity and credit, and functional, information technology and data security, reputed, and strategic threats (Bento et al., 2018).

H2: Risk management has a positive significant impact on effective management accountant.

Effective management accountant: The effectiveness of managerial accountants' results to ERM owing with the examined research explored their effectiveness through an expanded range of ERM fields namely finance-based compliance programs; statutory and fiduciary necessaries; managing, supporting, as well as minimizing threat; driving the ERM incorporation with decision-making throughout the firm; strengthening control in internal area; offering line leaders with information concerning threats and outputs; conducting ERM for the accounting/finance position; measuring and increasing the firm's ERM processes; and interpreting and making reports of the firm's performance, consisting of its related threats.

H3: Effective management accountant has a positive significant impact on Managerial performance.

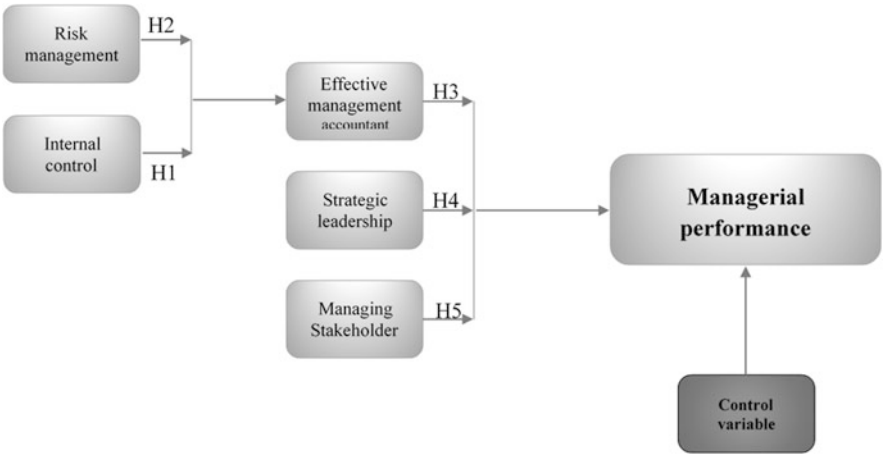

Fig. 29.1 Theoretical proposed model

Strategic leadership: SL has often been a vital part in effective PESs' management and headship with a view to identify the prospect and ethical reasons of an entity and get them into practice. Taking this into consideration, the school management, hence, should express teamwork and collaboration, which are necessary elements in provision of higher-quality education. Additionally, school leaders have to increase SL in the context of autonomy mechanism. Since they are not only primarily consulted in operative management in daily routine operations relevant to administration and pedagogy, but also requested for specifying targets of organization, human resource development, conducting, and assuring externally set the instructional rules. In this regard, MP is significantly based on management functions namely planning, organizing, controlling, and leadership (Mahoney et al., 1963).

H4: Strategic leadership has a positive significant impact on Managerial performance.

Management stakeholder: Public schools have to pledge with a diversity of heterogeneous stakeholders in conducting their mandate. Therefore, public schools are claimed to have a better understanding and involve stakeholders in a participatory manner. That has been so critical for an entity to run connection with the stakeholders to foster them to conduct in approaches that encourage the firms' functions, targets, and improvement of organizational entities (Midin et al., 2017). The more in value of stakeholders' inner have been enhanced, the more increasing in the performance of management within the organization will be achieved.

H5: Management stakeholder has a positive significant impact on managerial performance (Fig. 29.1).

4 Methodology

4.1 Procedures and Scope of Survey

In the qualitative in-depth interview, 8 experts were employed to increase insights on this subject. Thematic analysis was performed to analyze interview facts. The findings from the interviews were then adopted to establish a structured questionnaire survey for collecting primary data. A set of those questions provided was run for the period April in 2019 to June in the same year in Vinh Long Province and individually gathered by the investigators.

4.2 Sample and Data Collection

The survey by using a set of many questions in table was used to gather data to the research. The targeted respondents were accountants of Vinh Long public schools since almost all of the studies on management accounting have considered accountants as key respondents. In addition, apart from undertaking the duty of financial accountants, they are responsible for providing useful information relevant to management or utilization budget legitimately and effectively due to the actual data that they have hold commanding points in their several organizations together with have attained to particular information concerning the tasks, strategic development, the trading, and rivals of the entities. The questionnaires were sent to 432 accountants in PES located in eight districts and city in Vinh Long Province to increase the response level. Of those, 412 respondents completed the survey, resulting in a completion rate of 95.37% and a usable response rate of 4.63%.

4.3 Variable Measurement

The design of aspects related to theory of the suggestion model was tested by using multi-item scales validated in prior literature and modified as follows. As such, the study has tried to measure the RM by 5-item scale, IC by 8-item scale, EMA by 5-item scale, SL by 10-item scale, MS by 5-item scale, and the managerial performance by 6-item scale. The items of RM were adapted with some modification from Bento et al. (2018). The items of IC were adapted with minor adjustment from COSO ERM Framework (2004), which was developed by Datar and Rajan (2014). The items of EMA were adapted with some modification from Bento et al. (2018). The items of SL were adapted with some modifications from the work of Sotirakou and Zeppou (2006). The items of MS were adapted with some modifications from the work of Sotirakou and Zeppou (2006). The items of MP were adapted with some minor adjustments from the study of Agbejule (2005).

The 5-point Likert scale was employed in this research; as such, the answerers were requested to scale the extent to which they applied in different items of the grade (from 1 "completely disagree" to 5 "completely agree"). On the other hand, MP is also tested by an instrument utilizing a questionnaire for their self-evaluation. Thus, answerers were demanded to scale on a five-point Likert scale their personal perceived outcome (from 1"very poor" to 5 "excellent"). To control for a possible size effect, the degree of FA applied in this study was based on the level stipulated in the Decree No. 16/2015/ND-CP in 2015 namely FA in respect of public administrative units of which recurrent expenses are covered by the government; FA in respect of public administrative units that cover a part of their own recurrent expenses; FA in respect of public administrative units that cover their own recurrent expenses; and FA in respect of public administrative units that cover their own recurrent and investment expenses.

4.4 Data Analysis Tools and Techniques

In this research, the SEM was set up using the maximum-likelihood approach and conducted a two-step procedure requested by Anderson and Gerbing (1988). Statistical analysis tools namely EFA, CFA, and SEM were applied with the assistance of SPSS 25 and AMOS 24 software in order to carry out the tests relevant to reliability and SEM.

5 Results of Research

5.1 Descriptive Statistics

Ultimately, 412 completed questionnaires were received from 129 males and 283 females. All respondents were accountants. The majority of respondents were in the age from 30 to less than 35 years (34.95%). Regarding number of years of experience, 73 respondents (17.72%) belong to "5–10" group, 92 answerers (22.33%) are "10–15" group, 203 respondents (49.27%) are the "Above 15" group, and the remaining 44 (10.68%) are classified as "Below 5." The level education ranges of the sample, of which 275 participants had undergraduate degree and 137 participants had postgraduate degree. The results consist of 27.43% for nursery school, 45.87% for elementary school, 20.15% for secondary school, and 6.55% for high school. Approximately 65% of the selected organizations had their recurrent expenses covered by the government, while 35% was left for the schools of which a part of recurrent expenses was covered by government. In addition, the survey included the characteristics relevant to the size of organization, of which 47.33% was over "41 employees" group, while 29.13% was "31–40 employees" group, and the remainder belongs to the other two groups with lower 31 employees.

A detailed description of the respondents' demographic characteristics is depicted in Table 29.1.

5.2 Confirmatory Phase: Large-Scale Study

The goodness-of-fit statistics in the model of measurement achieved the compatibility with the empirical data captured significantly. The assessment pattern brought in a paradigm fit with df = 687, $p < 0.001$, and acceptable values of CMIN/df = 1.450; CFI = 0.959; TLI = 0.956; GFI = 0.888; and RMSEA = 0.033.

To check convergent validity relating to answerers given to the measured items, (1) reliability of the items linked with each determinant in the grade, (2) composite reliability of separate factor, and (3) average variances explained had been tested. The reliableness of separate item is ascertained by its factor loading in the factor it falls under. In research, the factor loadings of the variables were dissimilar from 0.603 to 0.848. Based on the papers released by Hair et al. (2010), a factor loading of over 0.50 is enough to decide that the item is reliable.

As an outcome, it has been finished that convergent validity is adequate at the item scale for individual factor. Secondly, composite reliability of separate construct was examined. Using composite reliability is endorsed for computing reliability for each design in SEM studies and was indicated that it was composite reliability when alpha value was not less than 0.70 (Nunnally & Bernstein, 1994). The composite reliability values computed for each construct in this research ranged from 0.859 to 0.909. Eventually, the average variance was supposed sufficient if this fact is not less than 0.50 (Fornell & Larcker, 1981). The values of average variance extracted (AVE) ranged from 0.501 to 0.603 for all groups in this research. Table 29.2 indicated that determinant built up for all classes had convergent validity.

It is essential to contrast the shared variance between the latent variables with AVE for separate latent variable in order to ensure discriminant validity (Farrell, 2010). The actual figures in fact on the rows and columns outside diagonals are correlations between the constructs. Under discriminant validity, the values on diagonals must be greater than their own row and column values (Fornell & Larcker, 1981). Hence, discriminant validity of the measuring test model was maintained by the consequences (Table 29.3).

5.3 Result of the SEM

Overall, a number of outcomes for whole hypothesis testing depict a model fit with approved values with acceptable point, and the structural model also denoted parsimony as the value of chi-square/df fell in the range of 1.0 to 2.0 (Hair et al., 2010). When fit measures like RMSEA, GFI, TLI, and CFI met the necessary thresholds, the structural model was indicated to have a good fit.

When the model adapt measures were in correspondent to the stipulated thresholds, the causal connections of constructs were examined. Consequences of this research paper depicted that IC was discovered to get a positive and significant influence on EMA ($\beta = 0.221$, $p < 0.001$), which supported H1. RM was found to have a positive impact on EMA ($\beta = 0.170$, $p < 0.01$), hence supported H2. The result also proved the relationship between MP and its determinants. Particularly, EMA was discovered to have a dramatic impact on MP ($\beta = 0.180$, $p < 0.001$), consequently supported to the H3. In addition, SL was found to affect MP ($\beta = 0.247$, $p < 0.001$), as a result supported H4. In terms of MS, it was known that it had an effect on MP ($\beta = 0.179$, $p < 0.001$), therefore supported H5.

For this, another consequence of SEMs was generated with the appearance of the control of FA on the MP. It could be clearly seen there were dramatic differences in the measurement value of majority of components between two models. Therefore, MP was proved to be controlled by FA. All things of above reported outcomes are indicated in Table 29.4.

The bootstrapping technique was employed with a total of huge observations. They comprised of 1500 random observations generated from the original sample and chosen bias-corrected bootstrapping approach with 95% confidence intervals in the estimation of the proposed model. From bias-corrected bootstrap test result illustrated in Table 29.5, it was proved that the estimates in the model were reliable.

In accordance with forecast, the findings proclaimed that the higher exploration and enhancement in EMA, SL, and MS can address the more MP increases. Consistent with last research studies, the execution of IC and RM will improve and maintain the management accountant performing in an effective way (Bento et al., 2018). Besides, the strategic leadership was the critical component in empowering the MP as PESs' managers are progressively perceived as a significant mechanism of PESs' improvement. MS is considered as another matter which deserves more attention as the result also proves the significant influence on MP. In accordance with guessing, the results proclaimed that the higher exploration and enhancement in EMA, SL, and MS can address more MP increases. Consistent with former research studies, the execution of IC and RM will improve and maintain the management accountant performing in an effective way (Bento et al., 2018). Besides, the SL plays the critical part in empowering the MP since the school leaders become increasingly important in mechanism of school improvement. Simultaneously, MS is considered as another matter which deserves more attention as related persons are more likely to demonstrate valuable facts of information that could orient to greater enhancement in MP.

Additionally, good related person relations are able to be a company to enjoy superior fiscal performance over a longer period of time, but that they also assist poorly performing companies to increase their performance more quickly (Choi & Wang, 2009). Due to the concern that public school will encounter management performance in the context of autonomy, the FA deserves more attention. In this study, an effort to change the paradigm of managerial performance in public education was made, focusing on the determinants and measurement the extent to which each of the determinants has an impact on MP in the context of financial

autonomy. As a result, there were several substantial differences in the extent of influence of each determinant of MP under the condition of FA. In the context of FA, the IC and the RM seem to unchange their impact on the performance of management accountant. In other words, the accountants must take notice of quality of IC and RM activities in undertaking their responsibilities. Contrary to our expectation, EMA, MS, and SL seemed to make less contribution in enhancing the MP. In other words, the school leaders and management accountants seem to be hesitant in exploration for all their capacities and investment for all activities. By the same token, MS may somehow lead to more transactions costs and increase the resources needed to create and enforce contracts requiring detailed monitoring. School leaders tend to take more caution into consideration in making strategic decisions, which were based largely on their own financial resources.

6 Conclusions and Discussion

Based on the exploration of the model using survey data from 412 public schools conducted in this research, we come to the conclusion that there is a significantly insensible impact of FA on the MP. The analysis makes in relation to the facts found in the empirical investigation among public schools in Vinh Long Province in the progress of attempting in getting higher number of autonomous local administrative achievement. The results provide some useful implications in improving and enhancing MP.

For the executive also, this article supplied to diverse implications of managerial aspects. As PESs' leaders have been considered as a main mechanism of school improvement. Definitely, they also mutually conform that the practices and wisdom of school controlling authority have been crucial to the favorable functioning of a school. Therefore, there is an urgent claim for leaders to possess full comprehension on all the policies and the right leadership style. Second, the managers need to pay attention to recognize particular capabilities needed to enhance performance. The board of executive should be informed of the process of FA development in order to understand the impact of financial autonomy on MP. The effects of this autonomy would decrease the level of dependency on state budget and fund for governmental activities. Hence, the state should consider supplying meaningful instructional supports to schools on the progress on comprehensive autonomy namely supports offered to PESs' leaders (coaching, supervision, training), and useful approach in division of time, physical, and personal resources. Furthermore, for managing the threat of fraud, the entities are desired to deal with both avoidance and recognition fraud in designing an effective scheme. Thus, the result of the model used in paper distributes managers with useful understanding for increasing the performance and competitive advantages.

There are also some relevant matters for school leaders to regard, which firstly is to develop the role and skills of accountant, especially management accounting skills in the organization although there is no specific title of management accountant

within the public schools at this time, the accountant in the organization still takes on this responsibility. In the context of FA, managerial accountants have crucial role in pursuing operation survival and achievement, managing the risk of fraud, and they have been needed to be proactively involved in value creation activities and recommend solution to the supervision. The accountants in managerial aspects need to react to modification in operating environment and expectation from controlling in an entity. Thus, management accountants should get enough training class, which is so appropriate basis for conducting antifraud agenda and adding value to their organizations.

Another implication for school leaders is to conduct equal treatment with all stakeholders and highly respected on their interest. Therefore, school leaders should take the benefit and the rights of stakeholders into consideration. This also helps leaders to draw together related parties in adequate manner to get fiscal objectives as stakeholders' impact was highlighted as a proven critical factor in the ability of an organization to achieve its strategic goals.

There were some limitations and hindrances encountered in the research. Firstly, some answerers in different leadership components were not reachable or contactable when paper commenced; thus, it had a bad effect on the breadth of the meaningful fact and scope of the results. Secondly, this research solely concentrated on the control variable (FA) on the dependent variable (MP). Therefore, future research should be considered to perform with the exploration of controlling this variable on the rest of elements of the model of economic and social component of sustainability. Equally, there are requirements to know the contribution of varied component of RM in shaping an EMA. Thus, in order to fulfill the gap, the future researchers are expected to investigate more aspects of RM, which lead to valuable managing accounting practices. The control variable included in this study was still limited. Therefore, it leads to the direction for future research to explore more variable addition into the model namely other types of school autonomy, working experience of leaders in the divisions, and size of organization. As author's researching article had been simply restricted to accountants at the educational fields of provincial public schools, the next endeavors should be able to choose the sample accountants from all classes of learning institutions (e.g., colleges and universities) so that further investigations of validity and reliability of this model could be conducted.

Appendix

Table 29.1 Demographic characteristics of survey answerers

Standardized path coefficients	Frequency	Percentage
Sexual of respondent		
Male	129	31.31%
Female	283	68.69%
Job position of respondent		
Chief accountant	–	–
Accountant	412	100%
Age of respondent		
Less than 25	51	12.38%
25–under 30	89	21.60%
30–under 35	144	34.95%
Over 35	128	31.07%
Experience of respondent (years)		
Less than 5	44	10.68%
5–under 10	73	17.72%
10–under 15	92	22.33%
Over 15	203	49.27%
Education		
Vocational degree	–	–
College degree	–	–
Undergraduate	275	66.75%
Postgraduate	137	33.25%
Type of organization		
Nursery school	113	27.43%
Elementary school	189	45.87%
Secondary school	83	20.15%
High school	27	6.55%
Size of organization		
Less than 20 employees	65	15.78%
20–30 employees	32	7.76%
31–40 employees	120	29.13%
Over 41 employees	195	47.33%
Financial autonomy		
Recurrent expenses are covered by the government	268	65%
Covering a part of their own recurrent expenses	144	35%
Covering their own recurrent expenses	–	–
Covering their own recurrent and investment expenses	–	–

Table 29.2 Result summary of measurement models

Latent variable	Indicators	Convergent validity		Internal consistency reliability		Discriminant validity
		Loadings	AVE	Composite reliability	Cronbach's alpha	
RM	RM1: Risk management practices to improve compliance/legal	0.756	0.554	0.861	0.860	Yes
	RM2: Risk management practices to improve operational organization	0.730				
	RM3: Risk management practices to improve IT/data security	0.737				
	RM4: Risk management practices to improve reputation/strategic	0.731				
	RM5: Risk management practices to improve employee's performance	0.772				
IC	IC1: Defining risks and averting incidents	0.738	0.503	0.890	0.889	Yes
	IC2: Decreasing the likelihood of events and their effect in cost-efficient approaches	0.767				
	IC3: Evaluating services and processes to assure compliance with standards	0.672				
	IC4: Supervising activities to detect rule violations	0.761				
	IC5: Minimizing risk losses when things have already gone wrong inside the entity	0.648				
		0.719				

(continued)

Table 29.2 (continued)

Latent variable	Indicators	Convergent validity		Internal consistency reliability		Discriminant validity
		Loadings	AVE	Composite reliability	Cronbach's alpha	
	IC6: Correcting faults when internal matters have already exacerbated risk exposure					
	IC7: Responding to stakeholders about threat failures that have already appeared outside the entity	0.603				
	IC8: Minimizing loss of reputation or sales because of threat failures that have already appeared	0.753				
EMA	EMA1: Meeting fiduciary and statutory demands	0.792	0.603	0.883	0.882	Yes
	EMA2: Intensifying internal controls	0.799				
	EMA3: Supporting/managing/diminishing risk	0.848				
	EMA4: Analyzing and making reports of the organization's performance relevant to its associated risks	0.684				
	EMA5: Supplying line managers' information regarding risks and consequences	0.749				
SL	SL1: Environmental analysis	0.719	0.501	0.909	0.907	Yes
	SL2: Citizens' requirement analysis	0.684				
		0.715				

(continued)

Table 29.2 (continued)

Latent variable	Indicators	Convergent validity		Internal consistency reliability		Discriminant validity
		Loadings	AVE	Composite reliability	Cronbach's alpha	
	SL3: Strategic orientation					
	SL4: Effectiveness in strategy design	0.685				
	SL5: Effectiveness in strategy communication	0.715				
	SL6: Gain consensus in objectives	0.712				
	SL7: Effective assignment of objectives	0.730				
	SL8: Effectiveness in strategy execution	0.709				
	SL9: Restlessness	0.722				
	SL10: Leadership wisdom	0.691				
MS	MS1: Carry out citizen survey regularly	0.841	0.598	0.880	0.875	Yes
	MS2: Ability to incorporate citizens' views	0.817				
	MS3: Ability to incorporate staff's suggestions	0.745				
	MS4: Effectiveness in strategic evaluation	0.829				
	MS5: Ability in problem-solving	0.622				
MP	MP1: Planning (identifying goals, policies, and courses of action)	0.783	0.504	0.859	0.858	Yes
	MP2: Organizing (exchanging information with person in your entity to relate and adjust functions, policies, and programs; advising; and	0.713				

(continued)

Table 29.2 (continued)

Latent variable	Indicators	Convergent validity		Internal consistency reliability		Discriminant validity
		Loadings	AVE	Composite reliability	Cronbach's alpha	
	liaising with other personnel in entity)					
	MP3: Evaluating (assessing and appraising actual performance and proposals for future performance)	0.655				
	MP4: Supervising (directing, orienting, and preparing personnel)	0.753				
	MP5: Staffing (maintaining the workforce of your responsibility area)	0.629				
	MP6: Overall performance	0.703				

Table 29.3 Results of discriminant validity

	RM	IC	EMA	SL	MS	MP
RM	1					
IC	0.181	1				
EMA	0.315	0.274	1			
SL	0.059	0.058	0.227	1		
MS	0.140	0.222	0.265	0.096	1	
MP	0.072	0.178	0.198	0.101	0.199	1

Table 29.4 Hypothesis testing results

Hypothesis	Relationship			Estimate	S.E.	C.R.	*P*	Conclusion
Model 1: *Structural model result for effective management accountant, strategic leadership, managing stakeholder, and managerial performance*								
H1	EMA	←	IC	0.221	0.063	3.529	0.000	Accepted
H2	EMA	←	RM	0.170	0.058	2.951	0.003	Accepted
H3	MP	←	EMA	0.180	0.044	4.108	0.000	Accepted
H4	MP	←	SL	0.247	0.049	5.032	0.000	Accepted
H5	MP	←	MS	0.179	0.049	3.639	0.000	Accepted
Model 2: *Structural model result for effective management accountant, strategic leadership, managing stakeholder, and managerial performance under the control of financial autonomy*								
H1	EMA	←	IC	0.220	0.063	3.516	0.000	Accepted
H2	EMA	←	RM	0.170	0.058	2.946	0.003	Accepted
H3	MP	←	EMA	0.165	0.043	3.846	0.000	Accepted
H4	MP	←	SL	0.235	0.048	4.899	0.000	Accepted
H5	MP	←	MS	0.167	0.048	3.497	0.000	Accepted
Model fit								
Model 1: CMIN/DF = 1.484; $p < 0.000$; GFI = 0.884; TLI = 0.952; CFI = 0.955; RMSEA = 0.034								
Model 2: CMIN/DF = 1.457; $p < 0.000$; GFI = 0.883; TLI = 0.953; CFI = 0.955; RMSEA = 0.033								

Table 29.5 Bootstrapping estimation results

Relationship			Bootstrap estimation				Discrepancy		
			Estimate	Mean	SE	SE (SE)	Bias	SE (Bias)	CR
Model 1: *Structural model result for effective management accountant, strategic leadership, managing stakeholder, and managerial performance*									
EMA	←	RM	0.221	0.220	0.067	0.001	−0.001	0.002	−0.5
EMA	←	IC	0.170	0.168	0.064	0.001	−0.003	0.002	−1.5
MP	←	EMA	0.180	0.179	0.051	0.001	−0.001	0.001	−1.0
MP	←	SL	0.247	0.247	0.053	0.001	0.000	0.001	0.0
MP	←	MS	0.178	0.179	0.057	0.001	0.000	0.001	0.0
Model 2: *Structural model result for effective management accountant, strategic leadership, managing stakeholder, and managerial performance under the control of financial autonomy*									
EMA	←	RM	0.220	0.219	0.067	0.001	−0.001	0.002	−0.5
EMA	←	IC	0.170	0.167	0.064	0.001	−0.003	0.002	−1.5
MP	←	EMA	0.165	0.164	0.049	0.001	−0.001	0.001	−1.0
MP	←	SL	0.235	0.235	0.052	0.001	0.001	0.001	1.0
MP	←	MS	0.167	0.168	0.056	0.001	0.000	0.001	0.0

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Chapter 30
The Strategy of Vietnamese Business Associations in Knowledge Sharing for the Sustainable Development of Vietnam Businesses Community

Dung Tien Pham and Binh Dinh Le

Abstract This article is the result of the research on the knowledge sharing of Vietnam business associations, which is one of the activities contributing to the sustainable development of Vietnamese businesses. The research aims to (1) review the current situation and the ways of knowledge sharing among member businesses of the associations; (2) investigate the influencing factors; and (3) propose the adapting strategy for Vietnam business associations to improve knowledge sharing for the sustainable development of Vietnamese businesses. Basing on the model of knowledge sharing and community of practice of Kimiz Dalkiz in combination with the SECI model of Nonaka and Takeuchi, the research used qualitative analysis with secondary data collected by desk research and primary data collected by survey, focus group discussions, and in-depth interviews among the representatives of Vietnam business associations and their member businesses. In the results, the research was able to answer the research questions including the current situation and ways of knowledge sharing of Vietnam business associations; point out the factors influencing this activity of the associations; analyze the root of the shortcomings; and propose the strategy for the associations in knowledge sharing for the sustainable development of member businesses and the economy of the country.

Keywords Strategy · Business association · Knowledge management · Knowledge sharing · Development

D. T. Pham (✉) · B. D. Le
VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam

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1 Introduction

If a firm's valuable resources are absolutely unique among a set of competing and potentially competing firms, those resources will generate at least a competitive advantage and may have the potential of generating a sustainable competitive advantage (Barney, 1991). This judgment of Jay Barney is perfectly suited to the knowledge resources of the business, and it also shows the importance of knowledge management (KM) in business organization. In the context of globalization with the strong development of information technology, new-generation technologies, and the changes in the ways customers buying things, knowledge creation and knowledge management are becoming more and more important for businesses to maintain competitive power (Dang & Nguyen, 2016).

Sharing knowledge plays an indispensable role in the cycle of knowledge creation (Nonaka, 1991). In practice, it has been proved that sharing knowledge helps many businesses' difficult activities become succeed, for example, in the case of the merger of Japan's Kawasaki Steel Corporate and NKK Steel Corporate in which thanks to the prior relationship of the engineers obtaining when joining the industry associations, it is easy to share, exchange, and integrate technology knowledge between the engineers of the two companies and make the merger process of two units into JEF became successful (Nonaka et al., 2011).

Vietnam Business Annual Report (Pham and Vu, 2015) points out that "The smaller the enterprises, the more they need to outsource business development services. Also, because they do not have enough human resources and do not hire external services, Vietnamese enterprises lack a lot of business skills and knowledge. As a result, small and medium enterprises' activities become unprofessional and ineffective. Perhaps many Vietnamese businesses have stopped working in the past years for this reason partly" (Pham and Vu, 2015). Vietnamese business associations (VBAs) play an important role in the country's economy, a bridge between businesses and the state, and between businesses and the community, and providing business development services for businesses including sharing and exchanging knowledge for businesses. The Provincial Competitiveness Index (PCI) Report of Vietnam Chamber of Commerce and Industry (VCCI) in 2014 shows that 43% of private enterprises believe that the role of business associations is important (VCCI, 2014). The results of the survey of VCCI (2013) and other surveys with the Soc Trang Provincial Business Association (SBA), An Giang Provincial Business Association (ABA), and Vietnam Poultry Association (VIPA) all show that enterprises have high demand for knowledge sharing, but they do not evaluate associations very highly in this activity.

The importance of knowledge sharing by VBAs and their shortcomings in this area show the needs of having research on the current situation and ways of knowledge sharing of Vietnam business associations, the factors influencing this activity of the associations, analyze the root of the shortcomings, and propose the strategy for the associations in knowledge sharing for the sustainable development of member businesses. Basing on the model of knowledge sharing and community of

practice (CoP) of Kimiz Dalkiz in combination with the SECI model of Nonaka, the research used qualitative analysis with secondary data collected by desk research and primary data collected by surveys, focus group discussions, and in-depth interviews among the representatives of Vietnam business associations.

In the results, the research was able to describe the research questions including the current situation and ways of knowledge sharing of Vietnam business associations; point out the factors influencing this activity of the associations; analyze the root of the shortcomings; and propose the strategy for the associations in knowledge sharing for the sustainable development of member businesses and the economy of the country.

2 Literature Review

Barney (1991) published the article "Firm Resources and Sustained Competitive Advantage" in Journal of Management No. 17 (Barney, 1991), giving "Resource-based management theory" explaining the phenomenal and sustainable business results of businesses. This theory sets the standard for internal environmental factors within a business. These standards are referred to as VRIN standards, including valuable; rare; imperfectly imitable; and nonsubstitutable. When these criteria are met, business resources are expected to help create superior and sustainable business performance. In other words, an enterprise/organization can gain a competitive advantage if the business fulfills its value creation strategies that current and potential competitors cannot achieve. This theory has been widely applied and proven in many different fields and industries including business associations, to explain and make recommendations for governance for the sustainable development of each organization. This theory can shed light on the motive of knowledge management when knowledge is considered as an important resource, meeting the criteria proposed by Barney in his theory.

Nonaka (1991) in the article The Knowledge-Creating Company is one of the first scholars mentioning the concept of "Knowledge Management", which comes from observing and analyzing the ways in which Japanese businesses developing successfully including the process of promoting the creation and sharing of new knowledge in all activities of organizations. Nonaka and his colleagues lean on the concept of knowledge as a process and assume that knowledge is created and used in the relationship with knowledge of different people that exists in a certain context. Also, from this, Nonaka introduced the SECI model of knowledge creation cycle or "knowledge spiral model". This research also applies this model in analyzing the state of knowledge management of VBAs.

In the book "Knowledge-based Management" Managing Flow Nonaka et al. (2011) introduced more theories of knowledge management, deepening the knowledge creation cycle through the SECI model and demonstrating the steps of the repeated cycle of knowledge creation–sharing–using. This model is also the basis for this research to base on in analyzing the current status of knowledge management of

VBAs and factors affecting it. Chap. 7 of the book also tells the stories of knowledge-sharing activities at YKK zipper manufacturing company and Japanese steel corporation (JEF), especially in the case study of JEF, which describes the merger of two Japanese companies Kawasaki Steel and NKK Steel. Thanks to the prior relation of the engineers who had joined in a same business association, it became easy for them to share, exchange, and integrate technology knowledge between the two companies and make the merger process of two companies into JEF became successful. The case of the JEF gives the lessons on knowledge sharing at the interorganization level through business association linkages and can be applied more or less in this research.

In the book "Knowledge management in theory and practice," Dalkir (2005) provided a comprehensive amount of knowledge about knowledge management including context and the needs for KM; KM process; model of KM; knowledge capture and codification; share knowledge and community of practice; using knowledge; and the role of organizational culture in the KM. The book provides comprehensive knowledge about knowledge management, which is particularly important as the section on knowledge sharing and community of practice with many concepts and models referred in this research.

In the book "Knowledge Management Foundations: Thinking about - How People and Organizations Create, Representing and Use Knowledge," Wiig (1993) created a model that helps to identify how knowledge is created and used. Though Wiig's model is simple, it helps explain the cycle of creative—using knowledge—and helps this research to go in the right direction.

In the book "Knowledge Management in Enterprises", Dang and Nguyen (2016) summed up the theories and lessons of success in knowledge management, helping readers to acquire the knowledge system of knowledge management in corporate and organizational environments. In particular, the chapter on knowledge sharing and the community of practice discusses a lot about knowledge-sharing models, especially the discussions on the practice of using and sharing knowledge, including group level, organizational level, and interorganizational level. The knowledge shared in this book is a useful reference for research on knowledge management and sharing of VBAs.

The book "The Road to Future - Effective Business Associations for Dynamic and Inclusive Growth in Vietnam" published by VCCI and the Asian Foundation (VCCI, 2015) is an exploring study of strategies of development and provision of services to businesses of VBAs across the country. Below is a list of strategic activities of VBAs that summarized through field research results and listed in this document.

- Provide information (policies, laws, market information, etc.)
- Facilitate the linkages between member businesses to each other and to the market
- Promote and introduce information and products of members
- Provide trainings and transfer of scientific and technical advances
- Organize tours for studying and share experience inland and abroad

- Support and advice member businesses to develop investment projects for expanding business
- Act as a bridge between member businesses and governmental agencies at all levels, especially in protecting the rights of members

It is easy to recognize that six of the seven activities mentioned above are activities related to sharing and transferring knowledge-associated VBA environment. These are important suggestions for conducting this research.

Other studies such as "Building the Capacity of Membership Organizations: Guiding Principles for Project Managers" (World Bank, 2005); "Business associations in Vietnam: status, roles and performance" (Nguyen & Stromseth, 2002); "Assessing the capacity of association according to modern criteria: Improving strategic management and association management" (CIEM et al., 2011); "Creating Income for Membership Business Organization: A Manual for Trainers" (SEQUA, 2013); and "Rethinking State – Society Relations in Vietnam: The Case of Business Associations in Ho Chi Minh City" (Nguyen, 2014) also provide similar perspectives on VBAs' strategic activities including knowledge management.

Although there are quite a lot of research materials on knowledge management in general and business association management particularly, there are very few studies and documents mentioning knowledge sharing or knowledge management of business associations. This could be a knowledge gap for this research to work on and clarify.

3 Methodology

The research focused on the matter of the knowledge sharing and exchanging activities of Vietnamese Business Associations in some provinces of Vietnam. The study is mainly conducted by qualitative research methods to analyze and evaluate research scope, in which:

Using the theories and perspectives collected through literature review and desk research the authors identified the information to be collected and evaluated (1) the status of knowledge-sharing activities of VBAs and (2) the influencing factors to knowledge-sharing activities of VBAs.

Secondary data collected from relevant studies, and primary data from in-depth interviews and focus group discussions with VBA representatives and from a number of relevant surveys that the authors have participated in, were used for this study to evaluate (1) the current status of knowledge-sharing activities of VBAs; (2) factors affecting knowledge-sharing activities of VBAs; and (3) knowledge-sharing needs of the member businesses of VBAs.

Comparative analysis between (1) current status of knowledge-sharing activities of VBAs and (2) knowledge-sharing needs of member business will indicate (3) shortcomings in knowledge-sharing activities of VBAs;

Using problem-solving techniques to work out (4) the root of shortcomings and propose (5) the strategy of VBAs in knowledge sharing for the development of businesses.

3.1 Data Collection

The research use data collection methods as follows:

Secondary Data (1) Report on "Operational Capacity of Vietnamese Business Associations" (VCCI, 2013); (2) "Provincial Competitiveness Index" (VCCI, 2014); (3) "Report "Proposal of Amendment the Development Strategy of Vietnam Poultry Association" (Pham & Tran, 2016); and (4) "Vietnam Business Annual Report "(Pham and Vu, 2015).

Primary data from in-depth interviews and focus group discussions with VBA representatives.

Primary Data From Survey (1) The data of the survey on operational capacity of Vietnamese Business Associations of VCCI in 2013; (2) the data of the survey among member businesses of Vietnam Poultry Association (VIPA) on the development strategy of the association for the period of 2012–2020; and (3) survey data from the needs assessment of member businesses of Business Association A in a southern province of Vietnam in a southern province: For the strengthening agricultural and fishery linkages in the province in the context of new-generation free trade agreements; (4) survey data on the needs of member businesses toward Business Association B in another southern province of Vietnam.

4 Results

4.1 Needs of Knowledge Sharing and Transferring of Member Businesses Toward VBAs

In order to assess the members' needs for VBAs, survey data on members' difficulties and needs in some VBAs are considered. Accordingly, at Business Association A in a southern province of Vietnam, the difficulties related to knowledge of member businesses include limited management capacity; weak access to information and technology market; lack of market information; having no websites; and short of awareness of current legal policies (Table 30.1).

As for Business Association A, its members need to be supported in knowledge sharing to better integrate with the impacts of new-generation trade agreements. According to the survey data from the need assessment of businesses in the province: For the strengthening agricultural and fishery linkages in the province in the context

Table 30.1 The difficulties of member businesses of Business Association B

The difficulties of member businesses	Percentage (%)
Hard to access loans	10.53
Need additional capital but having no sources	12.87
High debts of clients	12.87
Difficult to find new markets	26.31
High inventory	8.27
Management capacity is limited	*9.02*
Weak access to information and technology market	*4.54*
Lack of market information	*12.87*
Having no websites	*18.80*
Short of awareness on current legal policies	*14.29*
Difficult to access business development services	6.06
Legal system and dispute resolution	2.27
Difficulties due to transport infrastructure conditions	5.32

Source: Data from the needs assessment survey among the member businesses of Business Association B, 2017, collected and calculated by the authors

of new-generation free trade agreements, member businesses need more supports, focusing on providing market information; participating in technology transfer; and mobilizing funding for innovation.

At VIPA, according to the survey and assessment data on the implementation of the development strategy of the association in 2016, the members for VIPA requested to improve the knowledge-sharing activities include training and transfer of scientific and technical advances; organizing tours for learning and sharing experiences; and providing policy, legal, and market information, etc.

4.2 Knowledge Management Situation of VBAs

Business associations in Vietnam have good conditions for capturing and sharing knowledge. Due to the history of which most of the associations were formed as professional associations therefore, there have been several individuals who joined the associations of which there are several experts and specialists. Among the challenges for knowledge management including managing content; collaborating effectively; finding experts; and learning and making decisions based on complex mountains of information (Dalkir, 2005), VBAs have no such challenge of finding experts because they have many experts joined as members. Having many experts and specialists among the membership may be considered a strength or core value of VBAs (Table 30.2).

Table 30.2 Knowledge as resource in the strategic analysis of VIPA

Strength	*Opportunity*
The membership network is wide and relatively close; Financial regulations of the association have been established; Having large technological and knowledge resources from members who are experts of research and training institutions; Having experience and capacity to represent members in dealing with government for policy issues	The Ministry of Agriculture and Rural Development highly appreciates and gives favorable treatment to the association; Members' needs for the association's services are very rich, able to generate sustainable revenue; Having a great opportunity to cooperate from partners such as international organizations, associations of other countries, with other localities, with authorities, domestic organizations, and individuals
Weakness	*Threat*
Strategic planning ability is weak; Leadership and governance are weak; Unstable financial source; Capacity to provide services to members is weak; The capacity to develop the business community has not reached the target of the 2012 strategy	The capacity of member businesses is limited; The experience of other association is not much to learn; The competition of similar organizations; Scarcity of funding resources: As Vietnam is no longer considered a poor country, international funding is reduced

Source: Pham and Tran (2016)

- Knowledge creation activities of VBAs: It can be said, except for a few associations, VBAs are not strong organizations of knowledge creation. Some creative knowledge activities conducted by the associations include:
  - Research and survey to serve the operation objectives of the associations;
  - Research activities conducted by affiliated centers and units of the associations
- Knowledge capturing activities of VBAs include:
  - Studies and shared articles of scientists and experts who are members of the associations;
  - Market, scientific, and technological information provided by affiliated units;
  - Conferences and technical events in the network organized and attended by the associations;
  - New technologies introduced by member businesses for the purpose of promotion and sales
- Knowledge storage activities of VBAs

Most of VBAs have knowledge storage in the form of documents; many associations create periodical materials, magazines, and journals; and a few of the associations have created databases to store information and knowledge. Especially, most of the associations have well-organized member index, and websites for members to introduce information about themselves to ensure to provide the information of "who is who" for members and stakeholders.

As for knowledge sharing, it is particularly described in the Sect. 4.3 afterward.

4.3 Knowledge-Sharing Activities of VBAs

Sharing knowledge is the process of exchanging knowledge between individuals, groups, and organizations. Sharing knowledge can be concentrated or nonconcentrated, sometimes without a clear goal from the beginning. Sharing knowledge related to encrypted knowledge base and assistive technology. Many businesses now consider sharing knowledge seriously because they think sharing benefits businesses or simply technology that allows sharing to be made easier. Modern forms of knowledge sharing include database; best practice workshops; technology fair; multifunctional collaboration groups; groups on social networks; and e-mail group (Dalkir, 2005).

Regarding knowledge-sharing activities of VBAs, the following are the opinions of representatives of VBAs collected by in-depth interviews during implementing the Operational Capacity Survey Data of Vietnam Business Associations of VCCI in 2013.

Business Association B in another southern province of Vietnam: "Our association has linkages to support trainings by cooperating with other organizations or State agencies; Linking to mobilize members to go to training courses to accumulate knowledge in shortage including business administration and skills for problem solving."

Business Association C in another southern province of Vietnam: "Before that they (the members) chose VCCI for trainings because it was a big organization. In 2005, Business Association C organized the first training course. Gradually, Business Association C can arrange resource to cover expenses, establish prestige in the training market and have frequent customers."

Business Association D—a industry business association at country level of Vietnam: "The Association's publishes the Journal of Contractors and Construction Market, giving out to members every 2 months; Preparing Contractor Index in every 2 years; composing illustrated Vietnamese and English construction contractor dictionary for all businesses in the industry."

Business Association E—another industry business association at country level of Vietnam: "Our association has a website that gives complete information about associations and banking policies."

Business Association F—a agroproduct business association at country level of Vietnam: "Our association recognizes the technical proficiency of foreign trade and the level of foreign languages of businesses in coffee industry is poor so we have actively invited a member to the Executive Board who is the former ministry-level officer so that we will be able to consult and support our member businesses in choosing the right forms for contracts and export affairs, to consult in negotiations and in dispute cases. This activity of the association is quite strong and has directly helped the member businesses in negotiating with partners when facing difficulties."

"Our association proactively look for good coffee varieties and encourage coffee growers to plant for experiment. A number of new varieties introduced by the association has demonstrated good quality!".

Business Association G—another agro-product business association at country level of Vietnam: "The association takes part in consulting and surveying tea strategies for provinces; together with agencies to survey, investigate and give advice on provincial tea industry development strategies in Ha Giang, Lao Cai and Yen Bai provinces."

"VietGap is a good standard for tea cultivation within a program of the Ministry of Agriculture and Rural Development will be implemented massively in agriculture. The association participated in propagating and mobilizing enterprises to apply this standard."

Business Association H—a Small and Medium Enterprise Association of a province in the central region of the country: "We have programs to support businesses to expand their business and expand their vision by taking the business delegation to some countries in the world for study tours."

Comparing with the patterns of knowledge sharing (Dalkir, 2005), it can be seen that the knowledge-sharing activities of VBAs are very rich and creative, which have partly promoted the potential of knowledge of the associations. The main knowledge-sharing activities of VBAs include support consultancy; organizing training and providing business knowledge; publishing bulletins and magazines on new technologies and new policies of the government; providing knowledge through websites; organizing study tours; organizing of trial practices; and developing and encouraging for applying of industry standards.

4.4 The Influencing Factors of Knowledge Sharing of VBAs

Focus group discussion by brainstorming exercise with representatives of a small and medium enterprises association (Business Association I) and some provincial business associations shows that sharing knowledge of VBAs is influenced by many factors including (1) VBAs' available knowledge resource; (2) trust of members; (3) the enthusiasm and dynamics of association staff; (4) technology and communication capacity of association staff; (5) cultural environment of associations; and (6) potentials of knowledge sharing of member businesses.

To rank the degree of influence of these factors on knowledge sharing of VBAs, the focus group discussion with ten seed exercise was done with the association representatives. In this exercise, the influencing factors are listed on large paper, next to draw blank cells. The FGD facilitator gives a number of similar small particles such as plant seeds, nuts, buttons, gravel, and candies so that the participants of the FGD can divide the particles to the blank cells more or less corresponding to the degree of influence of each factor to the knowledge-sharing activities of VBAs. Every time when a person wants to divide again, he/she will be encouraged to present the reasons to convince other participants to agree with him/her. The division

Table 30.3 The ten seed exercise details

Factors/ FGDs	Association I	Association A	Association B	Mean	%
VBAs' available knowledge resource	17	15	14	15.33	15.18
Trust of member businesses	25	27	24	25.33	25.08
The enthusiasm and dynamics of association staff	23	25	27	25.00	24.75
Technology and communication capacity of association staff	17	20	23	20.00	19.80
Cultural environment of associations	5	7	4	5.33	5.28
Potentials of knowledge sharing of member businesses	13	8	9	10.00	9.90
				Total:	100

Source: Data collected and calculated by the authors through focus group discussion with VBAs

will be stopped when all participants agree with the division model. The number of particles in each cell will be calculated as a percentage and used as a coefficient in the influencing model. This FGD exercise is a part of the PLA (participatory learning and action approach), which is a method of information/knowledge collection and qualitative analysis introduced by World Vision and has been widely used in focus group discussions to get experts/informants to express knowledge/information and agreed upon open discussions. The exercise is highly participatory, eliminating all hesitation when expressing personal opinions. The exercise itself is a very good mean for knowledge sharing, especially exposing the tacit knowledge in each participant.

Accordingly, (1) the enthusiasm and dynamics of association staff; (2) the technology and communication capacity of association staff; and (3) the trust of member businesses are factors evaluated as the highest influencing factors on VBAs' activities of sharing and transferring knowledge (Table 30.3).

4.5 The Shortcomings in VBAs' Activities of Sharing and Transferring Knowledge

4.5.1 The Shortcomings

Besides the great potential along with very rich activities in knowledge sharing and transfer, VBAs also have some shortcomings that can be clearly seen when analyzing the current status of activity process, the influencing factors, the needs of member businesses, and the areas need improving. The shortcomings include:

The quality of knowledge-sharing activities has not met the expectations of member businesses, especially in training and technology transfer; in organizing study tours; and in providing policy guidelines;

The needs of member businesses have not been fully met on business administration skills; project development and management; communication; and supports for innovation;

The potential of mobilizing and sharing knowledge of member businesses has not been properly exploited.

4.5.2 The Causes

The barriers to knowledge sharing mentioned by Dalkir (2005) include (1) the perspective in which knowledge is considered property and ownership is important. The reason of this perspective is people get rewarded for creativity, not for sharing. This leads to the consequences of obstructing the creation of new knowledge after being shared; create loneliness; and create resistance to ideas from outside of organizations. In order to overcome this, organizations need to add reward mechanism for sharing knowledge; (2) Lack of trust between provider of knowledge and recipient of knowledge: Sharers are not sure whether the recipients of knowledge understand and use it correctly and the recipients does not know if the knowledge is valuable. In order to overcome this, the community has a system to review and reevaluate sharing; (3) Culture and organizational environment: Good culture will be an environment that promotes discovery and creativity, leading to support for knowledge sharing. Group result support environment will promote knowledge sharing. A culture only nurturing talents will hinder knowledge sharing and vice versa; (4) Undernet: Undernet exists when group members trust each other and implicitly share knowledge. The undernet is out of the administrator's control and prevents the communication of administrators' initiatives because the undernet is used more than official channels. In order to fix this, it needs to have personnel to join different networks to connect people.

Comparing with the barriers identified by Dalkir (2005) and the factors influencing knowledge-sharing activities of VBAs, the following causes need to be considered and solved to have more effective implementation of knowledge sharing.

The enthusiasm and dynamics of association staff: Practical lessons learnt from the in-depth interviews with the representatives of VBAs show wherever association staff are enthusiastic for the development of member businesses they will be dynamic to find ways to promote knowledge sharing more effectively.

Technology and communication capacity of association staff: Good technological capacity will help VBAs to create channels to collect the knowledge shared by members and help to build better storage and transfer facilities such as better websites, more interactive social networks, and more valuable articles for magazines/journals.

Building trust of member businesses: The available knowledge source VBAs and the potential of knowledge sharing of member businesses VBAs should be

exploited. To do so, building trust in VBAs' development goal is very important. Whenever members believe that an association works for their development then the knowledge-sharing activities from members will be more dynamic and effective. The reason for the relevant shortcomings is VBAs have not created the trust of members in the ability to limit conflicts of interest, unfair competition or transparency, and integrity of VBAs in mobilizing and sharing knowledge of member businesses.

4.6 Proposed Strategy of Vietnamese Business Associations in Knowledge Sharing for the Sustainable Development of Vietnam Business Community

The planning of the strategy for knowledge sharing of VBAs basically follows the principle of problem solving based on identified causes. For strategic solutions, the way to decide to choose is promoting strengths–taking advantage of opportunities and overcoming weaknesses–preventing/avoiding challenges. Accordingly, some strategy solutions of knowledge sharing of VBAs are proposed as follows:

VBAs should continue to implement their very rich and creative knowledge-sharing activities as they have done recently;

Continue to exploit well the source of expert knowledge available in associations;

VBAs should have policies and effectively implement the policies concerning staff so that they can actively and enthusiastically participate in implementing activities of sharing knowledge in a dynamic and effective way. Salary and bonus solutions which were mentioned in the lessons of knowledge transfer in Japanese corporates (Dalkir, 2005) should be considered to replicate in the case of VBAs;

VBAs should pay attention to build capacity for staff regarding sharing and transferring knowledge so that they have firm ability to acquire knowledge from experts and apply technology in storage, combining, and sharing knowledge. The business environment in terms of technology has changed rapidly, for VBAs as well, and the application of technology in knowledge sharing should be considered a vital solution of every VBAs;

Regulations of VBAs and the implementation of the regulations need to be improved, especially in ensuring the transparency and the integrity in knowledge-sharing activities. Building trust of member businesses will make them willing to share their knowledge for the sustainable development of the business community, of VBAs, and of the economy.

5 Conclusions and Discussion

Vietnamese business associations have great potential to successfully implement knowledge-sharing activities and effectively contribute to the sustainable development of businesses. By congruous analysis methodology, this research is able to describe the status of knowledge sharing in VBAs, the influencing factors, the needs, and the shortcomings of this activity. The research also analyzed the reasons for pointing out the strategic solutions for improving VBAs' knowledge-sharing activities for the sustainable development of the business community and the economy.

Despite great efforts, for a number of reasons, the research is only done on the basis of qualitative methods and the use of predominantly available data; therefore, the research results may not reflect the phenomenon on a wider context. In a better scenario, the method of collecting information needs to be well funded to ensure that the research results will be more widely applicable.

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Conflict of Interest The authors declare that they have no conflict of interest.

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Chapter 31
Macroeconomic Factors Affecting Merger and Acquisition (M&A) Activity in Vietnam

Nguyen Quyet

Abstract The purpose of this paper is to analyze the macroeconomic factors influencing M&A activity in the Vietnamese market, analyzing both short run and long term. The theoretical foundation is analyzed and synthesized from previous studies. Quantitative research methods and vector error correction model were employed to analyze time-series data. The results of the study indicate that, in the long run, M&A activity is affected by money supply, political risk, and economic growth. In the short term, the impact on M&A is the tax burden, and institutional and regulatory factors.

Keywords Merger and acquisition (M&A) · Vector error correction model · Political risk · Institutional factors · Regulatory factors · Vietnam

1 Introduction

M&A activity on the world has been quite bustling and so long. However, for the Vietnamese market, this trend has just started about two decades ago. From 1986 to 1995, this was the early stage of M&A activity in Vietnam, as the legal framework for this activity was not available or sufficient. As a result, historical data show that very few M&A deals are recorded during this period.

In the period 1996–2005, M&A trend in Vietnam started to develop lightly, with the small size of value and the number of transactions, particularly two deals reaching 6.8 (billion USD) at the lowest and 39 transactions reaching 123.5 (billion USD) at the highest. Also, the wave of rural banks being merged into the urban banks appeared in this period. These deals are mostly due to the arrangement of state management agencies but not from the market.

N. Quyet (✉)
University of Finance-Marketing, Ho Chi Minh City, Vietnam
e-mail: nguyenquyet@ufm.edu.vn

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In the period 2006–2013, this activity was considered as a milestone when the Vietnamese market welcomed a strong and vibrant M&A trend. The main reason is that laws are enacted such as Competition law, Enterprises law, Investment law, and Securities law, which have created a legal framework for the sale and transfer of contributed capital. In addition, data from the IMAA (2018) show that there were 47 sales in 2006, reaching 587.3 billion US dollars, 19 transactions higher than 2005 (67.8%), and worth $ 520.5 billion (779.18%). These numbers gradually increased and reached $ 4177.8 billion at the highest in 2012 with 363 deals.

It shows the recovery of M&A after a decline of more than 50% in value in 2013 from 2014 to 2017. The reason is that during this period, the legal and institutional framework continued to improve in order to attract potential foreign investors to invest in local businesses. Moreover, M&A activity is mainly from the participation of foreign corporations, accounting for over 81% and retailing is leading in M&A deals in this stage. Especially, the TCC Group buys Metro Vietnam's supermarket system at $879 million, AEON buys Five Mart and City Mark, and ThaiBev buys Sabeco.

In general, the trend of M&A activities in Vietnam is growing unevenly, with periods of significant decline. Which factors cause this situation and their impacts on the market will be addressed and discussed in more depth. The purpose of this paper is to examine the macroeconomic factors affecting M&A activity in the Vietnamese market by a quantitative method, analyzed by the vector error correction model (VECM). Based on this research, the research suggests a number of policies with the expectation of promoting M&A activity in the Vietnamese market.

2 Literature Review

So far, many studies on this topic have shown the complexity and diversity of the factors that affect M&A activity, depending on the space, time, and subject of the study. According to Hitt et al. (2006a, b), M&A activity is influenced simultaneously by factors such as the legal system, economic development efficiency, political environment, culture, and geographical distance. On this topic, Whitaker (2016) classify factors that affect M&A activity into four groups of varying degrees: *Group 1*: factors of financial market, economic growth; *Group 2:* governance, institutional and regulatory factors; *Group 3*: organizational structure of the sector and policy; and *Group 4*: education and training, corporate culture, and national culture. In this study, the factors are summarized and classified as follows.

2.1 Economic and Financial Factors

M&A activity is a complex process that depends on many factors in the economic system, financial markets, and especially capital markets (Weston, 1953). It depends

on the size of the economy (Boateng et al., 2011; Nakamura, 2004). In addition, stock market capitalization is considered an important factor reflecting the size of the financial market and has a significant impact on M&A activity. Nelson (1959) reviewed the change in M&A activity in the US market during the period 1895–1920 and showed a positive correlation between changes in M&A activities and stock prices. Similarly, Melicher et al. (1983) suggest that rising stock prices show the prospect of future economic growth leading to increased M&A activity. In support of this view, Benzing (1991) and Evenett (2003) affirm that there is a relationship between stock market and M&A activity.

2.2 *Institutional and Legal Factors*

Institution is a set of formal and informal rules that regulate human behaviors. These rules include the laws, regulations, and systems for enforcing regulations (Roumeen Islam, 2002). The basic characteristic of the law is the modeling of social relationships, including economic relations. Thus, the law may protect, prohibit, or encourage the economic relations of each country to adapt to each historical period (Bittlingmayer & Hazlett, 2000). A good legal system means that it does well in protecting intellectual property rights and respects copyright law and property rights of investors (Jory & Ngo, 2011). Furthermore, Dikova et al. (2010) argue that a poorly regulated country will have a negative impact on foreign investment, including M&A activity. Similarly, Alfaro et al. (2008) also argue that institutional quality is one of the most plausible reasons for explaining the paradox of why capital flows do not pour from rich countries to poor countries.

2.3 *Political Risk Factor*

Political risk is the risk by which the actions of governments can reduce the cash flow that investors expect from their investments. In general, this is not simply a mismanagement of the economy, which makes increasing inflation and damages the real value of investments. This result can lead to social unrest, which will cause companies to go bankrupt and hurt corporate stocks and bonds (Buttonwood, 2017). Delios and Henisz (2000) and Kobrin (1979) show that investors tend not to participate in or withdraw capitals from countries with high political risk. However, it is not entirely the case that in emerging economies there is a high political risk, but they still attract large numbers of foreign investors involved in M&A activities. In this case, Casson and da Silva Lopes (2013) and Peng et al. (2008) argue that investors wishing to pursue profitability and expectation will have the opportunity to expand rapidly, even if these markets are at risk.

2.4 Tax Factor

Taxation is a powerful tool used by governments to regulate macroeconomics and social life. The main aim of tax is to mobilize revenues for the state budget and ensure equality between economic sectors and social justice. However, for investors, a tax burden is one of the barriers to investment decisions. Ang (2008) argues that international capital flows are directly influenced by the host country's tax policy, as increased corporate taxes lead to less attractive investment. In this regard, Huizinga and Voget (2009) analyze the impact of taxation on the number of M&A deals in European countries, Japan, and the USA during 1985–2004. They found that the higher taxing country resulted in less attractiveness to market participants and smaller scope for conducting M&A transactions. On this topic, Martin et al. (2012), Chow et al. (2013), and Col (2012) confirm that there is a strong link between taxation and M&A activity.

3 Methodology

3.1 Data-Gathering Procedures

Research variables are defined as follows: Dependent variable (denoted ma) is the M&A value of Vietnam from 1996 to 2018 (time-series data). Independent variables are selected on the theoretical foundations and inheritance of the results of previous studies, including five variables measuring macroeconomic factors such as economic and financial factors, institutional and legal factors, political risk factor, and tax burden (Table 31.1).

The property rights index (value from 0 to 100) is employed to measure the quality of institutions and law. Similarly, the POLCON index (Political Constraints Index, Henisz, 2000) is used to represent political risk (value from 0 to 1). Identically, the tax burden index is spoken on behalf of the government's tax burden on the business (Index of Economic Freedom, 2018).

Table 31.1 Independent variables

	Factors	Variables	Symbol	Expected signs
1	Economics/finance	Economic growth	gdp	Real GDP growth rate (%) (+)
		Money supply	m_2	Deep financial market (%) (−)
2	Institution/legality	Property rights index	Pr	Value from 0 to 100 (+)
3	Political risk	POLCON index	Pol	Value from 0 to 1 (+)
4	Tax	Tax burden index	Tax	Value from 0 to 100 (−)

Source: Author's summary

3.2 Empirical Model

To learn about a potential long-run and short-run behavior between two series, the concept of cointegration will be analyzed with vector error correction model (VECM). If the variables $x_{t\text{-}i}$ and $y_{t\text{-}i}$ are integrated of order 1 and there is a linear combination, it represented by the equations

$$\Delta y_t = \beta_0 + \beta_i \Delta y_{t-i} + \beta_j \Delta x_{t-i} + \lambda ECT_{y.t-i} + u_{y.t}$$

$$\Delta x_t = \alpha_0 + \alpha_i \Delta y_{t-i} + \alpha_j \Delta x_{t-i} + \gamma ECT_{x.t-i} + u_{x.t}$$

where β_0, β_i, β_j, α_0, α_i, α_j are the model coefficients; Δx_{t-i}, Δy_{t-i} indicate the first variable differences to be tested, lagged by i periods; λ, γ is the long-term adjustment coefficient; $u_{y.t}$ and $u_{x.t}$ are the terms of random error; and $ECT_{t\text{-}i}$ is the long-term equilibrium of the deviation between Δx_{t-i} *and* Δy_{t-i} lagged in i periods.

4 Results and Discussion

4.1 Descriptive Statistics

The main aim of descriptive statistics is to provide a historical background for the behavior of our data. All series are converted into natural logarithms for estimation purposes. Table 31.2 summarizes the basic statistical features of the data under consideration including the mean, the minimum and maximum values, standard deviation, kurtosis, and skewness.

The results illustrated in Table 31.2 indicate that the variables are collected over a 23-year period, all of which have a shape of normal distribution (Statistical Jarque–Bera is greater than 5%). The gdp and pr variables have the right-handed distribution

Table 31.2 Descriptive statistics results

	ma	gdp	m_2	pr	Pol	tax
Mean	6.123516	1.863085	4.057863	2.562428	−3.331043	4.185035
Median	7.028822	1.859418	4.204693	2.302585	−2.267073	4.308111
Maximum	9.032839	2.234306	4.866765	3.906005	−1.780811	4.378270
Minimum	1.916923	1.497388	3.091042	2.302585	−5.912777	3.756538
Std. Dev.	2.223274	0.158161	0.671910	0.453481	1.669862	0.215049
Skewness	−0.298577	0.023591	−0.274912	2.129768	−0.535257	−0.940748
Kurtosis	1.622135	3.452769	1.503182	6.705381	1.514100	2.440057
Jarque–Bera	2.161140	0.198592	2.436820	3.545431	3.214153	3.692996
Probability	0.339402	0.905475	0.295700	0.144670	0.200473	0.157789
Observations	23	23	23	23	23	23

Source: Output from EViews 8.0

(because the skewness coefficient is greater than zero), and the remaining variables have left-handed distributions. The standard deviation value (Std. Dev) shows that the deviation (M&A value) is greater than the other variables. Mean value shows that during the 23-year period, the value of M&A deals is about 448 (USD billion), an average economic growth rate of about 6.5%. The property rights index of about 14.83 (less than 50) indicates that legal institutions are not really good quality. In particular, the average tax burden of 67,065 (greater than the average number) indicates that the tax burden is a burden on the business.

4.2 Stationary Tests and Order of Integration

There are many tests for stationarity, and the augmented Dicky–Fuller (ADF) test is the most popular one. The null hypothesis for the ADF test is that the time series has a unit root, which implies nonstationary.

The test results are reported in Table 31.3, which reveals that the ADF test cannot reject the null hypothesis for all level variables, but can for the first-order difference of all variables. The results indicate that all variables are I(1) processes.

4.3 Cointegration Test

The optimum lag length for the Johansen cointegration test is determined based on the minimum Akaike criterion (AIC) through the unconstrained VAR estimation (1 lag). To test for the presence of a long-run relationship, the maximum-likelihood method developed by Johansen (1988, 1991) is utilized. The results of the Johansen maximum-likelihood cointegration tests are presented in Table 31.4.

The test results are reported in Table 31.4, which confirm that there exists the presence of cointegration. It means that cointegrated variables have an error

Table 31.3 Stationary tests

	Augmented Dicky–Fuller test H0: existence of unit roots			
	Level		First-order difference	
Variables	No trend	With trend	No trend	With trend
ma	0.451269	−2.816144	−7.926882***	−8131221**
gdp	0.662677	−3.346692	−4.645744***	−4.557905***
m_2	3.071574	−0.9598573	−2.855934***	−3.21242**
pr	1.234433	−1.317340	−4.701548***	−5.627038***
pol	−0.585101	−1.80024	−4.472136***	−4.465135***
tax	0.882079	−1.264289	−0.992060	−6.683197***

Notes: ***, **, and * denote the significant levels of 1%, 5%, and 10%, respectively

Table 31.4 Cointegration test results

Hypothesized			Trace	0.05	
Unrestricted cointegration rank test (trace)					
H_0	H_1	Eigenvalue	Statistic	Critical value	Prob.
$r = 0$	$r \geq 1$	0.963560	163.1544	95.75366***	0.0000
Unrestricted cointegration rank test (maximum eigenvalue)					
Hypothesized			Max-Eigen	0.05	
H_0	H_1	Eigenvalue	Statistic	Critical value	Prob.
$r = 0$	$r = 1$	0.963560	69.55384	40.07757***	0.0000

Notes: ***, **, and * denote the significant levels of 1%, 5%, and 10%, respectively

Table 31.5 Vector error correction model estimation

Variables	Coefficient	Std. error	T-statistics
ect_{t-1}	−0.02717	0.014486	−2.22898**
gdp_{t-1}	1.21107	0.24369	4.96972***
m_{2t-1}	−2.13470	0.48771	−4.37698***
pr_{t-1}	−1.76509	1.07894	−1.63596
pol_{t-1}	0.22859	0.09685	2.36036**
tax_{t-1}	−0.56565	1.30591	−0.43315
Δma_{t-1}	−0.352840	0.21998	1.60395
Δgdp_{t-1}	0.009784	2.09186	0.00468
Δm_{2t-1}	0.026635	2.23989	0.01189
Δpr_{t-1}	0.489811	0.13376	3.66186***
Δpol_{t-1}	0.24606	0.12125	2.02936**
Δtax_{t-1}	−2.694469	1.07216	2.51312**
C	0.241732	0.34257	0.70564

R-squared=0.69336, F-statistic=5.20057; Prob(F-statistics)=0.0351

Notes: ***, **, and * denote the significant levels of 1%, 5%, and 10%, respectively

correction system. Thus, a vector error correction (VEC) model (with 1 lag) is constructed and the long-run and short-run dynamics are examined (Table 31.5).

Results in Table 31.5 show that the correction coefficient (−0.02717) is negative and significant statistics at the 5% level. It means that M&A values are below equilibrium, and in the long run, if the impact of independent variables pushes M&A on average increase (decrease) this year, the M&A value will decrease (increase) toward the equilibrium level of −2.717% the following year.

In the Long Term The results show that economic growth, money supply (measured by financial depth), and political stability affect M&A activity (because gdp_{t-1}, m_{2t-1} has 1% statistical significance, pol_{t-1} at 5% level). Assuming other factors remain the same, in the long term if the economic growth rate is increased by 1%, the M&A value will increase by 1.21107% on average. If the political risk increases by 1 point, the value of M&A deals will increase by 0.22859% on average. On the other hand, if the money supply increased by 1%, the M&A value fell by an

average of 2.13470% (Ceteris paribus). It implies that there is an increase in money supply leading to a big amount of money circulating in the market while low commodities. As a result, there is an imbalance between commodity and money, which is the source of increased inflation that causes investors to be less concerned about M&A activities.

In the Short Run The results of statistical analysis (Table 6) also confirm that institutional and legal factors, political risk, and tax burden affect M&A value (as statistical significance at 1%, 5%, and 5%, respectively). With a lag of 1 year, if the tax burden increases by 1, the M&A value will fall by an average of 2.694469% (assuming other factors remain unchanged).

5 Conclusion

The results of research on the macroeconomic factors affecting the value of M&A transactions in the Vietnamese market by quantitative method, analyzed by error correction model (VECM), have shown that M&A activity was affected by the economic growth, money supply, and political risk in the long term. In the short run, this activity is affected by the tax burden, institutions and legal factors, and political stability. From the results of the study, the paper draws some conclusions as follows:

Firstly, political stability is an important factor contributing to Vietnam's peace, prosperity, sustainable economic development, and investment attractions. Therefore, Vietnam should further promote this advantage to create confidence for investors, especially foreign investors. In addition, the government should continue to improve the legal system in a uniform, stable, complete, and consistent manner from central to local levels.

Secondly, the government should implement prudent and effective monetary policy, manage the money supply and credit growth accordingly, and avoid putting pressure on inflation. It is necessary to totally combine with other macropolicies to ensure macroeconomic stability, create a fair investment environment, and be transparent to encourage investors to participate in domestic investment activities including M&A activities.

Finally, the government, in the long run, should have a roadmap to reform tax policies and incentive tariffs to reduce the burden on businesses, create opportunities in attracting investment capital, and increase competitiveness with foreign partners.

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Chapter 32
A Comparative Analysis of Market Definition in Antitrust Law and WTO Law: Some Suggestions for Vietnam

Phuong T. M. Tong and Nghia Van Tang

Abstract Market definition is an important issue in both antitrust law and WTO law. Through comparative analysis approach, the author would like to answer the following research questions: How does the assessment of market definition's method of determination in WTO and antitrust laws suggest an interaction between two legal contexts? And how can we apply the research's findings to complete the legal framework on competition in Vietnam? The result shows that there is content interconnection between antitrust law and WTO law in terms of market definition, and also the consequences on the rule systems, methods, functions, scope of influence of market definitions, and elements to define it, together with some detailed implications for Vietnam.

Keywords Market definition · International economic law · Vietnam

1 Introduction

1.1 Research Rationale

Competition exists in every aspect of human beings such as economics and business, within a specific scope of country among enterprises or broader stages such as international market among countries. It brings both beneficial and detrimental effects to the participants in it. Competition acts as a catalyst for the improvement of production and trade, advancement of technology, and growth of a country's economy. On the other hand, some negative effects of competition have been

P. T. M. Tong (✉)
VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam
e-mail: phuong.tong.m15@wti.org

N. Van Tang
Foreign Trade University, Hanoi, Vietnam

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witnessed such as resource depletion, environmental pollution, the wealth gap, and market distortion. It is necessary to have rules and principles to protect and embrace the competition process in order to promote economic efficiency and maximize total welfare. Among these rules and principles, market definition concept (or relevant market) is such a crucial issue in international economic laws, including antitrust (competition) law and WTO law.

Particularly, the requirement of market definition, which is indispensable basis for the assessment and evaluation of market power used by entities and its consequences to the market, supports the purposes of antitrust law. Antitrust law aims to control the conduct of restraining competition in the market by the market players. For developed countries with market economy, antitrust law is essential to protect and maintain the process of competition and environment for competitive conduct. Primarily, for WTO members, market economy condition is required to ensure a fair stage for all members. Therefore, for a developing country such as Vietnam wishing to access to WTO, market economy is clearly an important subject to discuss. Thus, market definition will be the momentum to nurture and foster the market economy.

While market definition plays an important role in antitrust law, it remains a notable issue in WTO law. In fact, market definition, which is indirectly mentioned in WTO, without systematic rules and regulations, is scattered in different agreements. Its existence is aimed at constructing and implementing international trade policy together with applying trade remedies fairly. Specifically, WTO lawmakers and arbitrators define relevant market through theory of "like products," "directly competitive or substitutable products," and "like services and services providers" in order to apply principles of treatment, dispute settlement, and rules on market access or unfair trade among WTO members. Furthermore, market definition in WTO law is in close relation with basic principles of competition law due to the fact that WTO approaches competition topics in international trade through examining whether concerning products or services, practically or potentially, are in competition relation or not. It is clear that through defining relevant market, WTO will have a base to better apply its policy and rule system to solve different international trade issues.

Regarding the vital roles of market definition under the light of WTO law and antitrust law, it is crucial to have a deeper analysis and assessment of this concept, concerning certain period of interaction and close relation between two legal systems. Therefore, understanding and examining the strengths and weaknesses, in theoretical and practical aspect, of the notion of market definition are necessary for later application to international and domestic economic policies among countries, and practical suggestions for Vietnam, for the purpose of better integration into the global economy. This research is conducted to support the mentioned purpose.

1.2 Literature Review

A significant amount of research has been conducted to assess market definition's issue from different perspectives, and some only mentioned certain aspects of market

definition in scope of a particular country, while others evaluated it in a broader context of multiple topics, in comparison with different legislation systems of certain countries, or in the background of international economic law systems. This section will make a general assessment on existing literature regarding market definition.

1.2.1 Concept of Market Definition

Market Definition—Relevant Market Concept in Competition Law

In competition law, "market definition" or "relevant market" is a core subject for its essential existence. Its important meaning derives from the fact that competition law was born to protect the process of competition, which is vulnerable under the abusive use of market power by the players in the market. In order to protect the competition process, the law needs to determine which level of market power is subject to the restriction. The question is by what method market power should be assessed and evaluated in practice. Market power and competition exist in a certain market, which is relevant market or market definition. Therefore, defining relevant market is necessary for assessment of market power. Theoretically, it is desired that, in all cases, market power level of a specific firm can be directly measured and how much it can extend its market power. Several developed modern econometric techniques allowed direct assessment of market power such as elasticity of residual demand by Baker and Bresnahan (1985, 1988) or logit models by McFadden (1973) (Motta, 2004, p. 27). Nevertheless, in various situations, these techniques are difficult to use as being impractical and lacking necessary data.

Numbers of definitions related to market definition have been given. Recognizing its important roles, authorities from different legislations have provided definition for the terms.

The EU gives clear and separate definitions for relevant product market and relevant geographic market in The European Commission Notice on the definition of relevant market for the purposes of Community competition law, Official Journal C 372, 09/12/1997 P. 0005–0013 (EC's Notice on Market Definition). It also clarifies that under circumstances of assessment of a given competition issue, the relevant market is considered as such a combination of the product and geographic markets.

In the US Horizontal Merger Guidelines 1992 version (firstly developed in 1968), the definition of relevant market is described as a product or group of products and a geographic area in which it is produced or sold by a hypothetical profit-maximizing firm, probably would impose at least a small but significant and nontransitory increase in price, proposed that the terms of sale of all other products remained constant. Then, a relevant market is "a group of products and a geographic area that is no bigger than necessary to satisfy this test." The definition is much related to the SSNIP test, a method to define relevant market to be examined in later part of this research.

The definition of relevant market was also provided in Vietnam Law on Competition. The law denotes that relevant market consists of relevant product market and relevant geographical market, and then gives separate definitions for them in a similar way to the regulations of the EU law (Art. 3—Vietnam Law on Competition).

As we can see from these above definitions of relevant market, normally relevant market involves relevant product market and relevant geographical market. In competition law, market definition is only reviewed regarding anticompetitive practices, not unfair competitive practices because unfair competition behavior of an undertaking occurs, and has bad effects in the absence of the fact that its goods/services are interchangeable to the harmful affected goods/services (Murakami, 2003, p. 5).

Market Definition—Relevant Market Concept in WTO Law

Initially, based on the theory of relevant market, WTO law integrates the concept of "like products," "directly competitive or substitutable products," and "like services and services providers" into many agreements as a framework to develop further rules and regulations. Furthermore, market definition in WTO law has direct relationship with basic principles of competition law due to the fact that WTO approaches competition topic in international trade through examining whether concerning products or services, practically or potentially, are in competition relation or not. Existing in a competitive environment, "like products," which are "like" to each other, under a particular provision of the WTO Agreement and its Annexes, are considered to be in the same relevant market (Gocco, 2001, p. 1). "Directly competitive or substitutable products" are believed to be in the same relevant product market if they are bound by the same specific provisions of the WTO Agreement and its Annexes. WTO Dispute Settlement Body, Panels or Appellate Body (AB) often engage in market definition when they try to define the concepts "like products," "directly competitive or substitutable products," and "like services and services providers" in the concerning provisions in the related agreements to apply principles of treatment, dispute settlement, and rules on market access or unfair trade among WTO members.

However, the Panel and AB only define the mentioned set of notions in a case-by-case basis. Completely and unequivocally categorized schemes have not been undertaken by the AB in order to set out the rules on market definition.

1.2.2 Elements of Market Definition

Material

Material factor or physical factor or relevant product market is the main element in defining competitive relation among entities. This element also helps with determining economic concentration behavior together with the market power of one entity in

comparison with other entities in the same market. Under physical perspective, the relevant market is understood as market of products with identical characteristics, economic purpose of the use, and price level whereby customers believe that these products can meet certain requirements of them as these products can be compared with each other and substitutable for each other (Mäger, 2011).

Material factor of relevant market in international trade, which is identified as "like products," "directly competitive or substitutable products," or "like services and service providers," can be found in the WTO Agreement and its Annexes. For example, in Article 2.6 of the Anti-Dumping Agreement (ADA), the material factor is mentioned as follows: "Throughout this Agreement the term 'like product' ('produit similaire') shall be interpreted to mean a product which is identical, i.e. alike in all respects to the product under consideration, or in the absence of such a product, another product which, although not alike in all respects, has characteristics closely resembling those of the product under consideration." This definition is fixed and may be adverse to the purpose of other broader terms such as "like or directly competitive products," which is mentioned without being defined in the Agreement on Safeguards.

Physical factor plays a decisive position in defining relevant market in specific case.

Space

Normally, products/services are sold, provided in a defined market within a certain geographic area. In competition law, geographical factor of relevant market (or relevant geographic market) is a homogenous geographic area of products (in the relevant product market) whose distribution methods are carried out in a normal way, witnessing a competitive relation among products being interchangeable to each other under the demand-side perspective. In WTO law, regarding the international trade among countries, it is also true that each product or service being sold or provided might be in a defined geographic area and in a competitive relation with other products or services from other countries. Actually, the geographical factor is not directly referred to, but its appearance can be found in trade agreements. For example, geographic element in article 2.1 of the ADA can be "product" in importing country to be in comparison with "like product" being destined for consumption in the exporting country. In case, the existence of sales of "like product" is not available in the ordinary course of sale in the domestic market of the exporting country, the geographic factor can be changed into a substitution of "like product" being exported to an appropriate third country as stated in article 2.2 of the ADA.

Together with the material, the geographic element plays an important role in defining the relevant market.

Time

In competition law, among factors of the relevant market, time will be considered and reviewed under the circumstance that the demand or supply only exists in a certain period of time or certain moment. In fact, some entities only have the market power in the relevant market in a certain period of time because competition is a continuous process which entities will have to engage to gain the competitive advantages along time (Jones & Sufrin, 2011, p. 61).

In the WTO law, time aspect of the relevant market does exist, but it is not defined clearly in most of the trade agreements. In the ADA, Article 2.1—Determination of Dumping states that: "...a product is to be considered as being dumped, i.e. introduced into the commerce of another country at less than its normal value, if the export price of the product exported from one country to another is less than the compatible price, in **the ordinary course of trade**, for **the like product** when destined for consumption in the exporting country." Unfortunately, the ADA does not give a comprehensive definition for the concept "ordinary course of trade." In the *US–Hot-Rolled Steel*, the AB claimed that the investigating authority must exclude all sales, which are not transacted "in the ordinary course of trade" from the calculation of normal value. The AB accepted a definition provided by the United States Department of Commerce (USDOC) on the "ordinary course of trade": "Generally, sales are in the ordinary course of trade if made under conditions and practices that, **for a reasonable period of time prior to the date of sale** of the subject merchandise, have been normal for sales of the foreign like products." Once again, time factor was mentioned as the phrase "relevant time" to refer to "like product" in the explanation of the AB that "Where a sales transaction is concluded on terms and conditions that are incompatible with 'normal' commercial practice for sales of the like product, in the market in question, **at the relevant time**, the transaction is not an appropriate basis for calculating 'normal' value." Hitherto, *US–Hot-Rolled Steel* is among the cases, which tackled "ordinary course of trade" issue.

As a result, time factor of relevant market is assessed only in some particular cases.

1.2.3 And Other Issues

To some extent, market definition has been reviewed within country scope.

As noted in Brandenburger and Matelis, The 2010 US Horizontal Merger Guidelines: A Historical and International Perspective (2011), together with other issues of the 2010 US Guidelines, market definition was considered under similarity relation with other non-US Guidelines regarding "need not to be first step of the agencies' review" aspect only.

Cleary Gottlieb Steen & Hamilton LLP, China's Anti-Monopoly Commission of the State Council Issues Final Guidelines for the Definition of Relevant Market (2009) provided a summary of the China guidelines and mentioned that the

guidelines were generally in line with the EU and US practice regarding "usually a starting point for competition analysis," case of restriction of the hypothetical monopolist test, and factors for consideration.

Especially, in the OECD, Other Titles Series Roundtables on competition policy, OECD Market definition 2012 report (2012), legal issue and actual law applications of market definition in more than 30 different countries were explored and evaluated. This policy roundtable's report provided consensus of countries in several issues such as important position of an analytical tool, challenges in defining relevant market, and new alternative approaches for more effective competition policy.

Market definition in a broader stage has been substantially reviewed.

Defining relevant market in WTO law was notably evaluated by Hudec (2000), Gocco (2001), and Tang (2013). The first and second authors approached the basic WTO theories, principles, and the concepts of "like and directly competitive or substitutable products" and "like services and service providers" to examine the definition of the relevant market, the relationship among them, together with economic background and legal applications, and simultaneously proposed some recommendations to the definition and approach to market definition in WTO law. The third one discussed the definition of relevant market, related regulations in WTO, and factual situations in defining relevant market, and then gave some insightful conclusions and practical suggestions to Vietnam situation.

The similarity between determining "likeness" of products in WTO and the product and geographic market definition, a central point in competition analysis of antitrust law, was identified by Janow (2005). Melischek (2013) provided a coherent and comparative analysis of "product likeness" under the GATT (Art. III) and antitrust law. The author developed an economic approach with a specific substantive economic test to assess the notion of "product likeness" in operational, institutional, and procedural framework. On a methodological level, the book supplements a new interdisciplinary dimension to the legal discussion by analyzing the use of quantitative and econometric methods for the implementation of the proposed economic test. Also, market definition was considered in the relationship between WTO law and antitrust law on the aspect of benefit determination by Rubini (2016). Also, market definition was considered as value reconciliation, a case of renewable energy promotion under the WTO Agreement on Subsidies and Countervailing Measures by Kalimo et al. (2017).

Another comparison of the relevant market notion between EC and the US competition laws was performed in Comparison of the Notions of Relevant Market between EC and the US: What Can China Learn from Both Sides? by Song Xin (2007) with reference to definition and form of relevant market, together with process and evidence in market definition so as to make proposals to the Chinese legislation.

In conclusion, the existing literature has highlighted certain aspects of market definition. However, to some extent, a more comprehensive review of market definition has been required to help the policy makers with more effective economic

policies and to provide firm legal basis for decisions of dispute settlement body at WTO. Furthermore, research on market definition practice in Vietnam should be carried out to propose more practical suggestions to improve the current legal framework situation.

2 Methodology

2.1 The Research Question

1. How does the assessment of market definition's method of determination in WTO and antitrust law suggest an interaction between two legal contexts?
2. How can we apply the research's findings to complete the legal framework on competition in Vietnam?

2.2 Research Model and Hypothesis

The methodology used in this research is *comparative analysis approach* to point out the differences and similarities between two legal contexts: antitrust law and WTO law.

Through comparing and analyzing the legal texts and cases of antitrust law of different countries and WTO General Agreement on Tariffs and Trade (GATT) and General Agreement on Trade in Services (GATS), the author has the following hypotheses:

Hypothesis 1 (H1): There should be interrelated contents of market definition in antitrust law and WTO law.

Hypothesis 2 (H2): The interaction between two legal contexts on market definition may provide suggestions for Vietnam.

2.3 Scope of the Research

Within geographical scope, the research is intended to conduct a general comparison of market definition issue between WTO law and antitrust law in the world. Furthermore, the research will explore the current state "market definition" issue in Vietnam and provides several suggestions and recommendation for the improvement of the current circumstances.

Within time aspect, the research explores the market definition through its development from the past to current situation. However, market definition in current practices is strongly emphasized and evaluated.

Table 32.1 Stages in comparing process

	Antitrust law	WTO law
Stage 1	Addressing market definition in current WTO law and antitrust law	
	(1) Regulations on set of notions market definition in WTO law (2) The theory of comparative advantage (3) The rules of non-discrimination (4) Annexes of the WTO agreement	(1) Regulations of the EU (2) Guidelines of the OECD (3) Regulations in particular countries – The USA, Japan and China
Stage 2	Functions of market definition in WTO law and antitrust law	
	(1) A tool to define the boundary of competitive market (2) A base for further step in antitrust case investigation (3) An instrument for enterprises to protect legal rights and benefits	(1) An indirect tool in construction of international trade policy (2) An indirect tool in implementation of international trade policy (3) An important instrument for entities to protect their benefits
Stage 3	Determination of market definition under WTO law and antitrust law	
	(1) Basic principles for market definition (2) Method of determination in different countries' law (3) Analysis of market definition in competition cases	(1) Criteria in determining "like products" and related cases (2) Criteria in determining "Directly Competitive or Substitutable Products" and related cases (3) "Like Services and Service Providers" and related cases
Stage 4	Overview of market definition's issues related to Vietnam in WTO law	Overview of market definition in Vietnam Law on Competition
Stage 5	Some detailed implications for Vietnam	

Source: Authors of this research

2.4 Developing the Comparative Analysis Process as Follows (Table 32.1)

3 Results

3.1 The Content Interconnection Between Antitrust Law and WTO Law in Terms of Market Definition

Evidence for the interrelated relationship was early developed. The key rationale of the US proposal for the ITO (the International Trade Organization was the proposed name for an international institution regulating trade, before the establishment of WTO) at the conclusion of World War II addressed "restriction imposed by private combines and cartels" (Jackson, 1969, p. 522). Canada also shared the view on the negative influence which international cartels may make on world trade (Canada

DOJ, 1945). Chapter V of the Havana Charter of the ITO, containing the subject of restrictive business practices, was response for the prior concerns including a request that members control anticompetitive practices for normal flow of international trade as it stated that "Each Member shall take appropriate measures and shall co-operate with the Organization to prevent, on the part of private or public commercial enterprises, business practices affecting international trade which restrain competition, limit access to markets, or foster monopolistic control, whenever such practices have harmful effects on the expansion of production or trade and interfere with the achievement of any of the other objectives act forth in Article 1" (Art. 46.1, Havana Charter, 1948). However, it lacked a general obligation to adopt a competition law and was abandoned by the US Congress' opposition.

It was the fact that at the December 1996 Ministerial Conference in Singapore, desire of launching the negotiations on trade and competition policy was initiated. However, in the Doha Round, 2001 WTO Ministerial Conference, the issue was compromised among delegations to be continued in an educational mode (non-negotiating) only (Anderson & Holmes, 2002, pp. 531–563). The text related to the "Interaction between trade and competition policy" (WTO, Ministerial Declaration WT/MIN(01)/DEC/1, para. 23–15), especially, in paragraph 25, which is the major elements, was forwarded to the preparation process for Doha as potential elements of a WTO Agreement on competition policy (Anderson & Holmes, 2002, pp. 531–563).

Apparently, there exists the relationship between competition policy and the multilateral trading system. Primarily, it is widely accepted acknowledgment that common objectives of trade liberalization and competition policy lie on the promotion of economic efficiency and consumer welfare (The WTO, 1997; The OECD, 2001). Contradictorily, the expanse of the WTO involvement in competition policy has been questioned by trade experts and commentators (Klein, 1996). Some issues related to this debated interaction will be considered in the following parts.

3.1.1 Anticompetitive Actions and Import Market Access

The impact of anticompetitive conduct of corporations on goods/services' market access was possibly the most debated area concerning the interaction between competition policy and trade (The US ICPAC, 2000). Those practices contain vertical market restraints, monopolies, import cartels, exclusive or special privileges, private standard setting, and state trading. A concern at issue was that excessive focus on market access goal in rules on the WTO competition policy could distort the fundamental principles of competition policy (The WTO, 2001, para. 17).

3.1.2 Obstacles to International Trade Growth and Economic Development

Cartels have provided many evidences that they are truly obstacles to not only the international trade growth, but also the national economic development as they

determine to raise price and reduce output. Thus, consumers all over the world are the ones who will suffer the most.

Obstacles can be found in other areas such as trade in services, intellectual properties, and agriculture sector. International consumers will never get better services without the existence of competition policy, for instance, in banking services and airlines (The US DOJ, 2001). In 1998, within the WTO Working Group, the interaction between trade and competition policy was also a crucial aspect to be discussed, such as exclusive dealing requirement as hard as tying agreement in licensing agreement, limiting technology innovation, and customer benefit (Church & Ware, 1998, pp. 227–285). Intervention of the government in agriculture in the form of subsidies, trade barriers, and supportive programs may distort the competition process and limit the innovation in these sectors.

3.1.3 Contributions of Market Definition to the General Mission of WTO Law and Antitrust Law

The market definition, which was previously discussed in this research, should exist in WTO law and antitrust law to make vital contributions to the general mission of the laws.

In antitrust law, market definition is one of the most fundamental concepts constructing legal framework to uphold competition policy in most of the countries in the world regarding cartels, abuse of dominant position, and economic concentration. In WTO law, defining the set of notions "like products," "directly competitive or substitutable products," and "like services and service providers," market definition also supports the two main instruments as "substantial reduction of tariffs and other barriers to trade" and "elimination of discriminatory treatment in international trade relation" for WTO members to accomplish WTO objectives.

As a necessary element in the legal framework in both law systems, market definition is the condition for the implementation of both antitrust law and WTO law and the achievement of their objectives of protecting the competition process, and promoting economic efficiency and consumer welfares. Its important contributions will be evaluated in the later part of the research.

3.2 Comparison Results on Market Definition Between Antitrust Law and WTO Law in Theory and Practice

3.2.1 The Rule Systems and Methods of Market Definitions

Market definition in antitrust law has its own legal framework to support fully established methods, their implementation, and advanced development with newly developed instruments together with defined sanctions under countries' legislations. Market definition in antitrust law of developed countries having certain similarities

in principles, ruling contents, and implementation procedure has been deliberately discussed for policy improvement and further development, specifically in defining relevant market and broadly in implementing antitrust law internationally.

To some extent, WTO law shares the same criteria in market definition as antitrust law under earlier consideration. Nevertheless, the WTO Agreement and its Annexes lack a clear and systematic legal framework to support the defining process of relevant market. Furthermore, WTO authorities have not yet expressly categorized the procedures or methods it undertakes in ruling on this issue as defining the relevant market, due to the limited text of the WTO Agreement and its Annexes. Therefore, certain improvements and deliberations are particularly required for a better competitive environment for goods and services among WTO members.

3.2.2 Functions of Market Definition

Market definition keeps important functions in both law systems in helping the law to achieve its objectives and perform its functions. The most important function is a crucial element for the construction, implementation of the law, protection of the competition process, consumers, and enterprises' benefits. However, market definition is diverse from the nature of the two legal systems. In fact, market definition functions in antitrust law are supporting national purposes, especially competition among enterprises in each country, while in WTO law, their functions are for broader purposes, fairness among nations, maintaining a well-functioned multilateral trading system, and free flow of trade in goods and services.

3.2.3 Scope of Influence and Political Sensitivity

Regarding scope of effectiveness, antitrust law has gradually evolved on a country level to promote and maintain fair competition in markets, principally within the territorial boundaries of nation-states. In reality, the scope of influence can expand as some countries may allow for extraterritorial jurisdiction in competition cases. Similarly, market definition issue will share the same situation.

Regarding scope of application, market definition, which is a well-established method of preventing anticompetitive conduct, has been employed in antitrust law in many countries globally. Its position in the mission of protecting the competition process can vary from one country to another one. Under some legislation, market definition must not be the first thing to do in anticompetitive case due to the fact that there are other newly developed instruments that seem to suit the circumstance better, while in other legislation, market definition is the initial step in investigation.

In WTO law, regarding scope of effectiveness and application, market definition is applicable for all of its members because the provisions of the covered agreements constitute binding legal obligations with which all members must comply, such provisions already contain an obligation to refrain from any inconsistent action. Particularly, in trade dispute among member states, after the DSB adopts a report of a

panel and the AB, the conclusions and recommendations contained in that report become binding upon the parties to the dispute. Market definition issue is not such an exception.

3.2.4 Elements to Define the Relevant Market

Generally, factors of market definition are material, space, and time, which are the mutual requirements in antitrust law and WTO law and discussed in the earlier part.

Specifically, factors affecting market definition are basic principles of competitive restraints in both law systems. In antitrust law, they are demand substitutability, supply substitutability, and potential competition. In WTO law, the criteria are deferred among objects under consideration. They are physical characteristics, end uses, tastes, habit of consumers, and tariff classifications for "like products." They are quantitative data, trade barriers, and potential competitions in "directly competitive or substitutable products." For like services and service providers, the criteria are not available as it has only few cases and WTO members have expressed limited interest in discussing such issues.

4 Conclusions and Discussion

4.1 Implications for Vietnam

4.1.1 Overview of Market Definition in Vietnam Law on Competition

Followed by the economic transformation of the country, the new circumstance was in need of suitable political institutions, market economy to liberalize the production capacity, and competitive capacity of objects in the economy. Therefore, legal system gradually upgraded to create the legal base for economic activity that led to the emergence of Vietnam Law on Competition regulating market definition's issues.

All of the 123 Articles incorporated in six chapters of the law were issued with purpose of controlling competition-restricting acts, protecting entities from unfair competition actions, and creating and maintaining a fair competitive environment. Particularly, the law categorizes its scope of influence into two major behaviors, which are competition restrictive acts and unfair competition acts. The competition restrictive acts, which rule out 3 forms of anticompetitive conduct covering competition restriction agreement, economic concentration, and abuse of the dominant position or a monopoly position on the market, are based on the market definition. Market definition is the first task to do for competition authority to define market share of enterprises while handling competition cases.

Market Definition in Vietnam Law on Competition

Firstly, the law clearly defines relevant market being consisting of relevant product market and relevant geographical market. However, it does not mention the third element of market definition, which is time, besides the two above material (product market) and space (geographic market) elements (Art. 3 of the Vietnam Law on Competition).

Secondly, the definition of relevant market is considered as the first step in conducting assessment of anticompetitive cases. According to provisions in Articles 9.2, 11, 18, 19, and 89.1. (a) of the law, market shares is the base for the assessment of (1) whether enterprises involving in anticompetitive conduct or competition restraint activities or not, (2) defining the dominant market position of an enterprise or a group of several enterprises, and (3) classifying the economic concentration case to be prohibited or notifying the Vietnam Competition Authority (VCA) in specific cases before conducting the economic concentration activity.

Thirdly, Decree No. 116/2005/ND-CP dated on September 15, 2005, provides very detailed market definition with factors characterizing the relevant market in its Article 4, especially detailed provision mentioning "interchangeability" in section 5 of Article 4 and specific relevant product market and relevant geographic market.

Fourthly, the law and decree lack such a scientific way of defining relevant markets, such as SSNIP test, which is widely used by the authorities around the world. This is due to the fact that Vietnam has not yet issued guiding document to define the relevant market in a systematic and scientific way.

Fifthly, considering the prevailing trend in the world of changing market definition's position in the assessment of competitive restraint activities, Vietnam somehow lags behind. Even though market definition is well-established in the world, through studies on market definition in reality, many legislations recognize its ineffectiveness in particular cases. Thus, they have other newly developed instruments such as Pricing Pressure Indices and other tools to deal with special cases.

Generally, the Law and the Decree seem to share common view with the European approach on market definition. However, market definition provisions are still required to be complemented with well-established and newly developed techniques in the world that will help improve the effectiveness of the Law.

Grab—Uber Competition Case

Competition Merger Case at Issue Grab acquired Uber's ride-sharing business in Southeast Asia.

Case at Issue

The first opinion, the ride-hailing or ride-sharing transportation services provided by Grab or Uber, is considered to be part of one specific relevant market (which is different from that of traditional taxi in Vietnam). The explanations for this

perspective originated from the argument that only passengers using smartphone and installing ride-hailing or ride-sharing platform apps could become customers of these services. These customers are the ones who want to get connected in order to clarify and manage the route and price better while using the installed apps. In addition, they are also willing to apply modern technologies to take advantage from the transportation services. Moreover, many of them prefer to be transported by normal cars without taxi cabs, especially as they plan to go on a business trip.

The second supports for the classification of ride-hailing/ride-sharing transportation service and traditional taxi in the same relevant market as they both belong to passenger transportation service in general. The only difference is the modern apps usage and possible lower price thanks to the exploitation of redundant resources in the society. Ride-hailing/ride-sharing transportation service just brings passengers additional transportation choice. Besides, the simultaneous operation of these new and traditional services helps the administration of transportation services to be consistent and avoid tax escape, making transportation service more efficient. If this second view is supported, the merger between Grab and Uber is not problematic as Grab–Uber service just accounts for 15% of the entire transportation market in Southeast Asia.

The coexistence of these above-mentioned two opposite views until now has led to different approaches of merger control.

Legal Issues Uber was categorized as a transportation service provider and thus is subjected to transportation regulations by the European Court of Justice (ECJ) (Case C-434/15). Earlier, on December 20, 2017, the ECJ has ruled that Uber is a transport services company, and requiring it to accept stricter regulation and licensing within the EU as a taxi operator (Bowcott, 2017). According to the Madrid Commercial Court No. 2, the BlaBlaCar was considered an "electronic intermediator" (decision no. 30/2017 dated February 2, 2017). Uber had denied it was a transport company, arguing instead it was a computer services business with operations that should be subject to an EU directive governing e-commerce and prohibiting restrictions on the establishment of such organizations. According to the ECJ, Uber's services are "intermediation service." The purpose of services is to connect, by means of a smartphone application and for remuneration, nonprofessional drivers using their own vehicle with persons who wish to make urban journeys, must be regarded as being inherently linked to a transport service and, accordingly, must be classified as "a service in the field of transport" within the meaning of EU law.

"Consequently, such a service must be excluded from the scope of the freedom to provide services in general as well as the directive on services in the internal market and the directive on electronic commerce," the ruling said. "It follows that, as EU law currently stands, it is for the member states to regulate the conditions under which such services are to be provided in conformity with the general rules of the treaty on the functioning of the EU." The ECJ found Uber's services were more than an intermediation service. It observed that the Uber app was "indispensable for both the drivers and the persons who wish to make an urban journey." The court also pointed out that Uber exercised "decisive influence" over the conditions under which

drivers provided their services. Such an intermediation service, the ECJ concluded, must be regarded as forming an integral part of an overall service, the main component of which was transport.

Competition regulators in Grab's Singapore base, as well as key markets Malaysia, Vietnam, and the Philippines, are among those known to be scrutinizing the merger.

In Singapore, the Competition and Consumer Commission of Singapore (CCCS) proposed fines on ride-hailing firms Grab and Uber, and the evidence suggested that the merger had reduced competition and requested remedies such as the sale of their car-leasing businesses (Aravindan, 2018).

In Malaysia, according to Malaysia Competition Commission (2012) (MyCC), investigating any possible infringements, it would have to define the relevant market through identifying the close substitutes for the product under investigation. Even though Azhar (2018) estimated the postmerging firm holds monopolistic position in both the third-party taxi-hailing and private vehicle-hailing market, in every competition law regime, being a dominant position is not per se illegal, unless the firm abuses this position over other competitors. MyCC considered monitoring Grab for possible anticompetitive behavior, "especially if the company imposed unfair practices or sudden fare increases" (Sipalan, 2018).

In the Philippines, the merger also resulted in regulatory scrutiny; however, the deal was marked "all clear" by the regulator, with concern on "virtual monopolist" in the ride-hailing or ride-sharing services (Russell, 2018).

In Vietnam, the VCA demanded Grab for its acquisition's related information and documents, and urged the company to carefully assess the market share, and then concluded later that the company showed signs of violation of Vietnam competition law (VCCA, 2018). However, Grab insisted that the collective market share of them in Vietnam is less than 30% since its ride-hailing/ride-sharing transportation services and traditional taxi in the same relevant market; thus, it did not have to "inform the competition authority before proceeding and completing this transaction in Vietnam."

Result On June 17, 2019, the Vietnam Competition Council announced its decision rejecting conclusion from the VCA under the Ministry of Industry and Trade (MoIT), and ruled that no violation was found in the deal since the deal did not translate into an act of economic concentration through mean of obtaining ownership according to Article 17 of the Competition Law and Article 34 under Decree No.116 on Competition (VCC, 2019).

4.1.2 Overview of Market Definition's Issues Related to Vietnam in WTO Law

Since joining the WTO, there are advantages that Vietnam can enjoy. With multilateral trade mechanisms such as the WTO Agreement, the expansion of markets and the sharp increase in trade partners have opened tremendous opportunities for trade

volume's growth. Interactively, rising trade volume also contributes to the rapid FDI inflow. Public administration level has been significantly upgraded toward international standards, which effectively support the operation of market-oriented economy.

While enjoying these above benefits, the economy of Vietnam has faced too many challenges. Firstly, the deeper integration into the world leads to the unavoidable dependence of Vietnam economic factors on other countries' ones, particularly, when the competitiveness of Vietnam is still at low level. Secondly, the economy of Vietnam lags behind other economies, and the gap is being widened as a result of low level of development and low competitiveness. For example, playing in larger stage with inadequate preparations causes threats to infant industries under severe competitions with international giants, other powerful countries applying unfair trade measures, or providing government subsidies. Due to lack of resources such as human resource, capital, and technology, it is hard for Vietnam government and enterprises to timely react to such aggressive and unfair competitions as bringing a case to the WTO DSB or following the international legal process.

The unclear procedure in market definition in WTO law or the discretion of undertakings in interpretation of the meanings of the set of notions "like products," "directly competitive or substitutable products," and "like services and service providers" imposed effect on Vietnam's trading activities. This situation will be illustrated in two cases:

Catfish Case

Trade Situation The dispute occurred in the implementation of The US–Vietnam Bilateral Trade Agreement (BTA) and Vietnam's preparation to access the WTO.

Case at Issue In 2002, the American catfish farmers successfully lobbied Congress to approve legislation prohibiting producers and importers from labeling "catfish" on their products if the fish was not of the Ictaluridae family living only in North America in the Farm Security and Rural Investment Act of 2002. After that, the Catfish Farmers Association of America initiated an antidumping petition requesting investigations against Vietnamese catfish (frozen basa and tra fillets) exporters. American domestic producers usually use antidumping shield to restrain competition from foreigner producers (Kobbeman, 2004, pp. 427–28). Upon receiving the petition, the DOC and ITC must define whether the concerned product is being dumped, and the domestic industry has been affected, respectively. According to the 2003 "Notice of Final Antidumping Duty Determination of Sales at Less Than Fair Value and Affirmative Critical Circumstances: Certain Frozen Fish Fillets from the Socialist Republic of Vietnam," the DOC determined that Vietnam is a "nonmarket economy" where the government significantly influences the means of production, the allocation of resources, and the price and output decisions of companies followed by an imposed heavy antidumping margins on Vietnamese catfish products.

The Legal Issue On defining materially injured or threatened with material injury by reason of imports, the ITC gives the definition for the "domestic like product" as "a product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation. . ." *(according to 19 U.S.C. § 1677 (10)).* Raising an antidumping dispute needed the market definition of *"like product";* however, as they already prevent the "catfish" label from frozen basa and tra fillets from Vietnam regarding they are not Ictaluridae family, the petitioners and respondents agreed that there is no product produced in the USA that is *"like"* the article subject to investigation and argued that the "most similar product in characteristics and uses" to subject imports is frozen catfish fillets (of the native species Ictalurus Punctatus).

Result In 2010, the USDOC issued the final results of the Anti-dumping Duty Administrative Review and New Shipper Reviews, which contained margin calculations regarding substantial reduction in margin for Vietnam producers. The pair labeling requirement and the DOC's original decision were notoriously criticized, even within the USA. It is said that the decision protects only a specific interest group and ignores the benefits of American consumers (Cho, 2005, pp. 315–317), impairs the general feeling of good faith that existed in Vietnam toward the USA after the BTA. In the words of Senator John McCain: "In fact, of the 2,500 species of catfish on Earth, this amendment allows the FDA to process only a certain type raised in North America - specifically, those that grow in six Southern States. The program's effect is to restrict all catfish imports into our country by requiring they be labeled as something other than catfish, an underhanded way for catfish producers to shut out the competition. . ." (147 CONG. REC. S13426–27). The president of the American Seafood Distributors Association also denoted the case as pure and simple protectionism (Certain Frozen Fish Fillets from Vietnam: Hearing Before the U.S. International Trade Commission, Inv. No. 731–TA–1012, 147 (2003) cited in Do (2010)).

Apparently, the imposed measure, which was inconstant with some of the core principles in the multilateral trade system, pure discrimination, and protectionism, negatively affected the trade of two countries.

Shrimp Case

Cheap labor force and shrimp rearing technology progress are the main reasons making Vietnamese shrimp cheaper than uniform and higher quality American shrimp (Cho, 2005, supra note 84, p. 327). From 2000 to 2002, the growth in American consumers' demand for shrimp in the USA led to a large increase in shrimp imports and significant decrease in price. Represented by the Shrimp Trade Action Committee (STAC), American shrimp producers struggled to protect their profits (Showalter, 2005, pp. 847–848). In 2003, the STAC brought a USDOC dumping action against Vietnam and five other countries with the scope of the antidumping investigation included certain warm water shrimp and prawns, whether

frozen, wild-caught (ocean harvested), or farm-raised (produced by aquaculture), head-on or head-off, shell-on or peeled, tail-on or tail-off, deveined or not-deveined, cooked or raw, or otherwise processed in frozen form. In determining whether an industry in the USA is materially injured or threatened with material injury by reason of imports of subject merchandise, the ITC first defines the "domestic like product" and the "industry." The ITC has applied the statutory standard of "like" or "most similar in characteristics and uses" on a case-by-case basis (The US ITC, 2013). After consideration, the US ITC decided that "a single domestic like product encompassing both fresh warm water shrimp and the frozen warm water shrimp described in the scope definition."

Legal Issue Even though Vietnam brought the case to the WTO with the request for consultation on February 1, 2010, the market definition raised no issue. As number of antidumping measures including the questioned zeroing method calculating the dumping margins of the USA gained the spotlight, market definition is still a base for further application of antidumping measures in the USA.

Results Pursuant to Article 19.1 of the DSU, having found that the USA has acted inconsistently with provisions of the ADA and of the GATT, the panel recommended that the USA bring its measures into conformity with its obligations under those Agreements *(United States—Anti-dumping Measures on Certain Shrimp from Viet Nam).*

4.2 Some Detailed Implications for Vietnam

4.2.1 Learning from Other Countries' Experiences

Antitrust law and market definition in the world have a long history, while Vietnam only has had the regulations circulated since 2004. Consequently, Vietnam can learn a lot from other countries' law and policy-making experiences on market definition.

Practical implementation of antitrust law in many countries, especially OECD countries' experience, has shown that the investigation and determination of relevant market are very complicated, requiring flexibility and responsibility of the case's handling authorities. In the previous section, some other ways to deal with competitive restraint while dealing with cases showing limitations of market definition, several types of defining markets have been explored. Normally, market definition is the initial step to help calculate the market shares, which embody the market power of an enterprise. In several types of markets, market shares and concentration measures might not reflect the exact level of the enterprises' market power and the potential competition effects. In merger cases, the intensity of competition and substitution between products and the closeness of competition between bidders are advised to be considered instead of market shares in differentiated product markets or bidding or auction markets, respectively. Similarly, two-sided markets or industries exhibiting rapid innovation also need more attention. Another example,

for industries expressing rapid innovation, the boundaries of any defined market can be unjustifiable together with unstable market shares overtime (The OECD, 2012, pp. 337–339). Such "cellophane fallacy" is remarkable for its abnormal characteristics too. In reaction to these specific drawbacks of market definition, new instruments have been developed such as pricing pressure indices and other tools for an initial assessment of mergers.

Vietnam competition authorities should be aware of all the prevailing issues related to market definition to apply in their practical application of the law.

4.2.2 Actively Participating in International Activities Related to Market Definition

While actively participating in international activities, Vietnam competition authorities can acquire faster the advanced knowledge and techniques of the world. Currently, VCA is one of the members of the International Competition Network (ICN), which provides competition authorities with a specialized and informal venue for maintaining connection and addressing practical competition issues, allowing for dynamic dialogues to build consensus and convergence toward sound competition policy principles across the global antitrust community. Members generate work products through their participation in flexible project-oriented and result-based working groups largely through Internet, telephone, teleseminars, and webinars. Annual conferences and workshops provide opportunities to discuss working group projects and their implications for enforcement (The ICN, 2009). As being a member, VCA can learn from the recommendations, or "best practices" from the projects, individual competition, and exchange the experience with other country's authority to improve its operations and update itself with precious information.

Being a member of WTO, Vietnam needs to carefully consider "market definition" issue. With two example cases "Catfish" and "Shrimp" related to market definition and antidumping remedies applied by the USA, Vietnam has had first experience in WTO law. In fact, market definition related to trade remedies is a familiar topic among members of the WTO as trade disputes blossom along the years since the WTO establishment. Moreover, the diversified facts and elements in each case are precious experience for Vietnam. One very famous example of transformation in applying WTO law is China case, from being a frequently sued trade partner to active participant of the WTO DSS as third party in real disputes and to finally, one of the most aggressive case-initiating members of WTO. Vietnam can study the model of China to prepare necessary conditions in case of future involvement.

These practical experiences are abounding, serving as precious sources of market definition application for Vietnam authority to learn from and to improve Vietnam competition law regarding Vietnam economic conditions.

4.2.3 Completing the Current Legal Framework Regarding Market Definition

Until now, many countries such as the USA, the EU, China, and India have issued guidelines on market definition supporting the competition authorities in better defining relevant markets. Vietnam has not yet had such guidelines on market definition and may learn from the experience of other countries to issue these guidelines in the future.

From the assessment of the current law and subordinate legislation, there are several significant issues regarding market definition, which need more attention from the lawmakers. First of all, law and subordinate legislation do not systematically mention the principles and elements of market definition such as material, geography, and time. Particularly, time element has not been considered as it does not exist in the documents. Secondly, the law and its subordinated legislation lack contents, procedures, and applied conditions of economic tests to define the relevant markets such as the SSNIP test and other quantitative tests, which have been well-established and widely applied in the world. In the content of Decree No 116/2005/ND-CP detailing the implementation of a number of articles of Vietnam Law on Competition, quantitative tests are somehow presented without specifically addressing the name (own price elasticity of demand, cross price elasticity of demand, or price correlation analysis) or particular description of the techniques. For instance, in provision related to transportation cost factor in defining geographic market, Clause 2, Article 7, Decree No.116/2005/ND-CP, only provides that geographic area shall be determined based on, inter alia, transportation costs. The regulations do not provide any more details on how and to what extent competition authority can determine the transportation cost?

These mentioned issues may only be among current concerns related to market definition, which needed to be addressed. Obviously, more studies on market definition in Vietnam are also required to provide sources for the improvement of the law.

4.2.4 Raising Vietnamese Enterprises' Awareness of Market Definition

Despite the important roles and functions of competition law in the business activity, a limited number of enterprises are aware of the existence of competition law, especially market definitions issues; thus, enterprises need to have better understanding of the law. Knowing the competition law, importantly, how the law can protect entities and how entities can protect themselves from competitors in terms of relevant market as discussed in the previous chapter regarding the roles and functions of market definition. Therefore, it is necessary for enterprises to be aware of the market definition. Here, the VCA can play crucial roles in providing a platform where enterprises are provided with fundamental and essential information such as website, seminars, and conferences on competition law and market definition.

In WTO law perspective, the government authorities, the business community, associations, and enterprises participating in international trade need to be equipped with legal knowledge and awareness of hands-on investigation methods such as in trade remedy cases. For example, when involving in trade disputes, Vietnam producers and enterprises need consultations on the precentive measures and other issues (antidumping, subsidy, safeguard duty, investigation procedures…) on time. To support the mentioned work, it is possible that VCA regularly organizes consultations with associations, businesses, and corporations about application, procedure, contents, and work related to trade remedy investigations to provide entities with better preparation in international trade and protect the production and development of domestic economy.

4.2.5 Improving Competition Authority's Capacity

Based on the information exchange with other countries' authorities, VCA's officers can improve their capacity in implementation of the law. Furthermore, cooperation with international organization, global competition councils in technical assistance, international report review, international program and forum participation, launching regional website, and so on, are among the ongoing work of international competition councils and commissions that result in the improvement of competition authority's capacity. These activities are necessary for VCA to fulfill its functions as the state administration of competition.

Increasingly, participating and involving in a variety of activities related to capacity improvement can help the authorities to upgrade their working ability. In 2014, VCA in cooperation with the Korean International Cooperation Agency (KOICA) in Vietnam officially announces the successful accomplishment of a specially designed US$1.5 million integrated information system aimed at improving the competitiveness of Vietnamese businesses. The system is expected to support the VCA to improve efficiency of their state management functions, speeding up administrative reform, handling competition cases, and trade remedies.

With respect to reviewing and analyzing the conflicts between Vietnam Law on Competition and sectorial regulatory laws, VCA in collaboration with the Japan International Cooperation Agency (JICA) accomplished and published a report "Review of Competition Law related regulation in sectorial regulatory laws." Basically, the report provides assessment, recommendations on amendments, and supplement to the competition legislation or sectorial laws in respect of a consistent legal system to ensure efficiency in the policy implementation process.

The impressive results together with other recent achievements have demonstrated VCA capacity's improvement. These activities, under the favorable conditions, will help VCA advance the capacity of Vietnamese competition officials.

4.2.6 Promoting the Transparent Business Environment and Cooperation of Enterprises

In order to implement the competition policy and law, the transparency and the cooperation of enterprises should be improved.

In competition law perspective, entities will decide to file a complaint to the VCA in case of being aware of competitive restraint business activities. Similarly, in case of conducting economic concentrations, entities need to notify the competition management authority for investigation or exemption and completely cooperate with the requirement from the authority.

In WTO law perspective, when trade disputes happened between other countries and Vietnam, there are enterprises that were not willing to provide the investigation authority with information to support defending activities. In particular, some enterprises did not cooperate with the investigating officials of foreign countries or were late in presenting information and did not follow the investigation till the end. These kinds of response resulted in disadvantages and injuries to the export of investigated products. Furthermore, the reputation of producers and exporters in international market is reduced. As a consequence, the investigated products may receive unfair decision causing loss of revenue and market for producers and exporters (VCA, 2012, p. 65).

Therefore, promoting the transparency in business activities and cooperation from entities are important and required for better implementation of competition law and policy.

4.3 Conclusions

Along with the evolutions and development of humans, competition has had itself transformed into different forms, contents regarding the vivacious minds of human beings through intellectual faculties, creativeness, and diversified objectives. Whether market definition appears in antitrust law or in WTO law, the general idea is returned to competition. Aiming at different purposes, the establishment and existence of two systems of laws, with the support of an instrument called market definition, raised international and regional attention together with interesting aspects that led to the conduct of this research. Through evaluating, analyzing, and comparing market definition's issues between WTO law and antitrust law, the commonalities and differences are unfolded.

The first and fundamental issue is that relevant market is a particular market within certain scopes in which competition between interchangeable or substitutable goods or services of entities can happen. Defining relevant market or market definition is a familiar work of competition authorities, WTO panel or AB. A number of definitions have been given related to the notions. They are officially provided in antitrust law under different countries' legislations or in the research of scholars or

experts. On the other hand, the market definition notion in WTO law is provided only within the context of particular Annexes of WTO Agreement, or through the work of panel or AB in dispute settlement process of trade dispute, in a case-by-case basis, owing to the complexity of the work under the terms and conditions of a multilateral trade system.

The second issue to be emphasized is that, through the history of antitrust law and WTO law, the important roles of market definition have been witnessed. Market definition has been the legal framework for the implementation of both laws' systems. In antitrust law, it has the functions as a tool to define the boundary of competitive market among enterprises, a base to apply further step in antitrust case investigation, an important tool for enterprises to protect their legal rights and benefits. In WTO law, it plays as an indirect but useful tool in construction and implementation of international trade policy and law, and also an instrument for entities and countries to protect their rights and benefits.

The third remarkable issue is that based on related theory, principles, and elements constructing such legal systems, the methods of defining the relevant market are established. Based on theory of comparative advantage and rules of nondiscrimination, market definition in WTO law is indirectly mentioned and not generalized with clear principles and procedure through which the set of notions "like products," "directly competitive or substitutable products," and "like services and service providers" are examined. In fact, lacking defined methods is witnessed as the definition of market based on case-by-case basis, by discretion of the Panel, AB, and members that sometime led to the intentionally false interpretation of members to apply protectionist trade measures. Nevertheless, market definition in antitrust law is systematically well-established in the EU, the USA, and most of the countries in the world based on three elements "material, space, and time" with very clear stated principles, purposes, and roles. Several objective and scientific methods have been developed and widely applied. Their effectiveness is examined and tested frequently on roundtables to seek a suitable application and further advancement.

All of the above findings are carefully considered to give some valuable suggestions to the current situation of market definition implementation in Vietnam. On one side, Vietnam authority might turn market definition into an effective tool to facilitate its governmental management functions in protecting the competition process and consumers' benefits, spurring the development and innovation of products and services qualities, and promoting the total welfare for the domestic economy's growth. The result of a strong economic market may be a good preparation when Vietnam opens the door to international trading partners—members of the WTO. On the other side, Vietnam authority can effectively employ and transfer the knowledge and skills needed related to market definition notions to help Vietnamese enterprises in protecting their products and services traded internationally against the trade-restrictive measures applied by trading partners such as notorious antidumping measures.

If the above-mentioned designation scheme for market definition is implemented and applied well in both WTO law and antitrust law perspective by the Vietnam authority resulting in overall improvement of the country economy, then market

definition has successfully and convincingly proved its crucial roles in both theory and practice.

On the whole, all of these findings are for the purpose of contributing to the market definition issue with regard to theory and practice. Future development in market definition is required for better policy and law implementation in both laws, concerning a full operation of the multilateral trade system and additional approaches to complement the market definition and overcome its existing drawbacks.

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Appendix

List of Cases

- Grab–Uber competition case
- US—Hot-Rolled Steel, WT/DS184/AB/R, report of AB, 24/07/2001, para. 145
- United States—Anti-dumping Measures on Certain Shrimp from Vietnam, Dispute DS404, Panel report, 11 July 2011
- US—Catfish—Certain Frozen Fish Fillets from the Socialist Republic of Vietnam, 74 Fed. Reg. 45,805 (Dep't of Commerce Sept. 4, 2009)

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- Farm Security and Rural Investment Act of 2002, Pub. L. No. 107–171, § 10,806, 116 Stat. 134, 526–27 (codified at 21 U.S.C. § 321d (2006)). Available at: https://www.congress.gov/107/plaws/publ171/PLAW-107publ171.pdf
- Guidelines on Market Definition 2012, Malaysia Competition Commission
- The European Commission Notice on the definition of relevant market for the purposes of Community competition law, Official Journal C 372, 09/12/1997 P. 0005–0013 (EC's Notice on Market Definition)
- The US Horizontal Merger Guidelines 1992
- U.S. Code, Title 19. Custom Duties, Chapter 4. TARIFF ACT OF 1930 Subtitle IV. COUNTERVAILING AND ANTIDUMPING DUTIES, Part IV. General Provisions, Section 1677. Definitions; special rules, Subsection (10) (19 U.S.C. § 1677(10))
- Vietnam Decree No 116/2005/ND-CP detailing the implementation of a number of articles of Vietnam Law on Competition
- Vietnam Competition Council, Decision 26/QĐ-HĐXL on handling of competition cases 18 KX HCT 01 (VCC 2019)

- WTO Agreement and its Annexes
- 147 CONG. REC. S13426–27 (daily ed. Dec. 18, 2001) (statement of Sen. McCain)

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Chapter 33
Website Marketing Activities in Healthcare Service Sector: A Case in Danang, Vietnam

Phuong Truong, Huong Doan, and Long Tran

Abstract Studies in healthcare service have received remarkable attention from both researchers and practitioners. This specific topic is interesting because of not only its complexity in nature as highly customized, highly risk-taking but also the high extent of coproduction in the value creation process. This study was implemented with the involvement of more than 40 healthcare service providers to augment better understandings of the current marketing practices using websites within this specific sector. Four dimensions including information, communication, transaction, and relationship were deployed to evaluate the website marketing activities. While the information and communication dimensions initiate the relationships between customer and provider, the communication and transaction ones maintain and develop these relationships. Research findings suggested that in Danang, the transaction and relationship dimensions should need a better consideration due to their importance.

Keywords Health care · Marketing practice · Website marketing activities

1 Introduction

Recently, the consumerism in health care has received much credence in research studies. Jaakkola and Halinen (2006) have implied in their study the upsurge of consumerism in the healthcare sector, in which the consumers seek information from the available sources including the Internet and online communities. It is recognized that the Internet, online communities, and cloud computing technology are giving the patients more power and transforming the traditional paternalistic approach toward patients to a more patient-centric one (Laing et al., 2002; Taylor, 2009) to satisfy the patient's needs as a customer (Osei-Frimpong et al., 2016). Perceiving the

P. Truong · H. Doan · L. Tran (✉)
University of Economics, Danang University, Danang, Vietnam
e-mail: longtd@due.edu.vn

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patients as the clinics' customers, we can better understand how the Internet can serve as an effective marketing tool between suppliers (hospitals and clinics) and customers (patients) for its capabilities of information dissemination, communication, and online transaction (Chiappa, 2013; Law et al., 2010; Ting et al., 2013).

The healthcare service, however, is different from other service sectors. Unlike the customers of other products and services who enjoy their status elevated under their potential purchases, the patients have their status reduced by the illness, injury, or health concerns (Torpie, 2014). Compared to other service industries like tourism or banking, the healthcare one is highly customized and contains high risk and the high extent of the coproduction in the value creation process—providers highly rely on information from the individual patient (Vogus & McClelland, 2016). In order for the healthcare services to deliver better customer satisfaction, it is claimed that the health facilities should provide safe, effective clinical treatment and cleanliness and comfortability to the patients (Torpie, 2014) and that the care providers should be supported in coping with the stresses and traumas experienced at work and in making more accurate decisions (Vogus & McClelland, 2016). When it comes to the technologies to take roles in the healthcare industry, the technologies themselves have to function in a way that meets all the expectations on how to deliver better satisfaction. Studies on the technologies in the healthcare industry, as a result, should take into account the expectations of both patients and care providers to define how the e-health care should take place.

In Vietnam, the most severe issues of the healthcare system can be listed as (1) overcrowding and very high occupancy rates and (2) obsolete equipment and access to drugs (Gaskill & Nguyen, 2015; Export, 2018). The causes of the problems can be the inequality of care between the urban and rural areas, the low budget, and the shortage of qualified medical staff who work under stressful conditions and whose wages are relatively low. To overcome the issue of overcrowding, some ideas to use online resources have been implemented. The online services range from online appointment making, to information providing, to interacting with doctors via websites or apps (e.g., Bacsinho.com, beestromed.com, and homecare.com). Online healthcare services have arisen as a new trend of the century to connect care providers with patients and to face the current severe problems of the healthcare system in Vietnam. Yet, the impacts of online services or their roles in the society have not received sufficient attention from the researchers.

Indeed, the technologies nowadays have shifted the healthcare services to a more customer-oriented approach. However, the healthcare industry has its specific points, and technologies must meet the expectations of patients and care providers to take their roles in the industry. In the case of Vietnam, online technologies are expected to provide patients more access to information and care providers, as well as to lighten the stress at work for the care providers. The new trends of using online resources in healthcare services, however, have not received enough attention from researchers in Vietnam. The authors, therefore, would love to contribute to such a potential area. The authors are well aware that before conducting any further research to give the stakeholder recommendations to make the healthcare services more satisfying, we must write a serious paper on the status quo to understand how everything is

functioning at the present. In this paper, the authors aim to apply relevant and understandable methods to investigate the status quo of the online healthcare service activities in one of the biggest and most dynamic and innovative cities of Vietnam: Danang. In this paper, the authors refer to online activities on the official websites of hospitals and clinics, because of their authenticity and popularity in the healthcare industry that the authors can observe.

1.1 Website Marketing Activities

Regarding using the website as a marketing tool, there have been many kinds of research focusing on how the tool functions and supports the users. Merono-Cerdan and Soto-Acosta (2007) identified that organizations could reinforce their performance by using websites to provide information to customers, business partners, and other stakeholders (e-information), interact with both external and internal business agents (e-communication), and fulfill online orders (e-transaction). Chiou et al. (2010) have analyzed a total of 83 articles on website evaluation and indicated that website marketing activities should be transaction-oriented and serve each phase of the transaction process: information, agreement, and settlement through their functions as follows: product, promotion, price, place, and customer relationship. The information phase lasts from the moment when the customers access the website of the organization to when they decide to make an order or to leave the website. The agreement phase is in charge of the negotiations between the buyers and the sellers and the contracts made. Finally, the settlement one involves contract execution, product delivery, and after-sale interactions. Another notable paper on functions of marketing websites is by Wang and Russo (2007), who argued that whether the commercial websites are successful or not dependent on the integrative application of the following components: (1) up-to-date and accurate information provision, (2) effective and constant communication with customers, (3) reliable and seamless electronic transaction, and (4) appropriate and sustainable relationship-building programs. Li and Wang (2010) later added the fifth dimension, technical merit (the success of the lower technology deployment level is the prerequisite of the effective implementation of the higher one), and constructed a conceptual website evaluation model consisting of five dimensions: information, communication, transaction, relationship, and technical merit.

Overall, the research studies mentioned focus on the functions of the websites as a marketing tool of the organizations. The studies agree on some roles of the websites as a marketing tool to connect the providers and buyers: a means of information providing, communication, transaction execution, and relationship maintaining. There are some differences between the researchers in the problem. For instance, Merono-Cerdan and Soto-Acosta (2007) did not mention the relationship maintaining the role of the websites, while Li and Wang (2010) added the technical merit one. Chiou et al. (2010), on the other hand, approached the relationship between providers and customers as transactions and the websites through their

marketing functions support each of the phases of the transaction process from the first phase as information accessing to the last one as contract execution and after-sale activities. Because of these differences, the authors would love to review the roles of the websites in the healthcare industry to choose the most appropriate approach for this paper.

1.2 Website Marketing Activities of Healthcare Provider

In the healthcare segment, because of the value cocreation between patients and care providers, the participation of the patients in the decision-making process is crucial. It is claimed that patients who are better informed can communicate better with the care providers, leading to better healthcare service received (Osei-Frimpong et al., 2016; Vogus & McClelland, 2016). It is also claimed that the consumer health information technologies, which include websites, are expected to facilitate information access and exchange, enhance decision-making, provide social and emotional support, and help behavior changes that promote health and well-being (Or & Karsh, 2009). Powell et al. (2003) stated that the Internet could be a resource for health information, a medium for health interaction, and a tool for the delivery of health care. It can be seen that most of the papers reviewed focus on the information and communication functions of the websites. From the marketing perspective, the authors would love to figure out if the current healthcare websites in Danang provide the transaction and relationship (between the healthcare organizations and the patients) maintaining functions besides the information and communication ones. Therefore, we would look for marketing criteria to investigate healthcare websites. We would also critically and reasonably adapt the criteria to be suitable for the healthcare segment.

1.3 Evaluating Website Marketing Activities of Healthcare Provider

In the hospitality segment, Li et al. (2015) used the four dimensions of information, communication, transaction, and relationship to evaluate the hotel website marketing activities. There are some reasons for the authors to adopt these four dimensions in this paper: (1) Like hospitality, health care is a service industry, (2) the criteria used have been tested and were shown to be reliable, (3) the dimensions are fairly comprehensive, and (4) the scales are suitable for the objective of the paper, which is to evaluate the commercial healthcare websites. However, the authors have to adapt the criteria, which are based on the four dimensions, to the healthcare perspective, which is way different from the hospitality one.

Because the healthcare websites are usually used by those who are in distress, users must be able to find the right health provider to get treatment, retrieve medical records (such as test results and other health information), and pay their bills easily. As the effects of the provided healthcare service on the patients are severe, and the service-producing procedures are simultaneous to the receiving processes of the patients, the more the websites make the patients feel secure about what they are going to get through, the better it is. DBS (2018) listed the applications that a website has to have to provide qualified online healthcare service: (1) navigation to the healthcare centers, (2) expert medical information (about health conditions, organizational news, health-oriented events, and classes for example), (3) information about physicians and clinicians and links to them, and (4) employees' testimonials.

There have also been some criteria used in other papers to evaluate healthcare websites. The authors have reviewed the papers by Sanchez and Sanchez (2011), Howitt et al. (2002), and Alpert (2015) to see how healthcare websites were evaluated in other papers. It appears to the authors that although the papers have the same concepts of investigating whether the current healthcare websites have the listed items, none of these papers use the four marketing dimensions to evaluate the websites. Therefore, the authors will selectively use the items being used in the papers reviewed.

After reviewing the criteria used by Li et al. (2015) and the must-have applications of a successful healthcare website from both academic papers and online articles from marketing websites with prestige, the authors have come up with criteria to evaluate the healthcare websites in Danang (Table 33.1):

2 Methodology

For the evaluating criteria to be more reliable, the authors asked for opinions from two doctors from two top hospitals in Danang, a CEO and a founder of a healthcare startup. As a result, the experts who we interviewed advised us to add some items to the criteria. The items added include "Access to test results or personal medical records," "Chat online" (Table 33.2)

The authors also surveyed the top 40 hospitals and clinics in Danang and figured out that only 23 of them have official websites. After that, the authors investigated how the websites were performing using the criteria. The result would be discussed in the coming section.

3 Results

As can be seen from the table, the items that are used the most by the websites in Danang are contact information (95.65%), interactive forms (91.30%), search functions (82.61%) from the communication dimension and services offered (86.96%),

Table 33.1 Criteria to evaluate website marketing activities of healthcare providers

Website features	
Information dimension	
Medical information	DBS (2018), Alpert (2015), Howitt et al. (2002)
Information of physicians and clinicians	DBS (2018), Alpert (2015), Sanchez and Sanchez (2011), Howitt et al. (2002)
Links to physicians and clinicians	DBS (2018), Sanchez and Sanchez (2011)
Maps/driving directions	DBS (2018), Li et al. (2015), Alpert (2015), Sanchez and Sanchez (2011), Howitt et al. (2002)
Facilities	Li et al. (2015)
Services offered	Li et al. (2015), Howitt et al. (2002), Sanchez and Sanchez (2011), Alpert (2015)
Healthcare event information	DBS (2018), Li et al. (2015)
Employment opportunities	Li et al. (2015)
Communication dimension	
Contact information	Li et al. (2015), Alpert (2015), Sanchez and Sanchez (2011), Howitt et al. (2002)
Interactive forms	Li et al. (2015), Alpert (2015), Howitt et al. (2002)
Search functions	Li et al. (2015)
Other language options	Li et al. (2015), Alpert (2015)
Frequently asked questions	Li et al. (2015), Alpert (2015)
Transaction dimension	
Online reservation	Li et al. (2015), Alpert (2015), Sanchez and Sanchez (2011), Howitt et al. (2002)
Relationship dimension	
Patient reviews	DBS (2018)
Privacy policy	Li et al. (2015)
Special deals	Li et al. (2015)
Patient support	Li et al. (2015)
Loyalty programs	Li et al. (2015), Alpert (2015)
Personalization	Li et al. (2015), Sanchez and Sanchez (2011)

and medical information (73.91%) from the information dimension. There are no loyalty programs or personalization. 65.22% of the healthcare centers have online reservation. Only 8.7% of them have patient reviews, 4.5% have a privacy policy, and 4.35% have access to test results or medical records. The availability of other items on the websites ranges from 13.04% to 52.17%.

It appears to the authors that the websites from the private healthcare centers have more items, especially ones related to customer care, than the public ones. Most of the centers from the public segment have similar items to each other. The private ones, on the other hand, vary in designing the dimensions and items for their websites. Another thing that should be put into consideration is that there is no clear difference between the websites of the centers in the urban and suburban areas

Table 33.2 Revised criteria to evaluate website marketing activities of healthcare providers

Dimensions	Items
Information dimension	– Medical information – Information of physicians and clinicians – Links to physicians and clinicians – Maps/driving directions – Facilities – Services offered – Healthcare event information – Employment opportunities
Communication dimension	– Contact information – Access to test results or personal medical records – Chat online – Interactive forms – Search functions – Other language options – Frequently asked questions – Frequently asked questions
Transaction dimension	– Online reservation
Relationship dimension	– Patient reviews – Privacy policy – Special deals – Patient support – Loyalty programs – Personalization

of Danang. To the authors' observation, the differences lie mostly between the websites of the public and private centers (Table 33.3).

4 Conclusions and Discussion

This paper has reviewed the healthcare websites in Danang and given the idea of how the websites are performing in terms of website marketing dimensions such as information dimension, communication dimension, transaction dimension, and relationship dimension. It appears to the authors that most of the healthcare websites in Danang focus more on the information and communication dimensions than the other two. Among the four dimensions, the one that is least focused on is the relationship one, leading to the question of whether the healthcare centers should invest more in maintaining relationships with their patients and how they can do that. To answer this question, research on the bargaining power of the patients in the Danang market is needed, so that we can figure out if the healthcare centers must spend their resources on keeping the patients coming back to them whenever they need healthcare services.

One achievement of this paper is to create criteria to evaluate the healthcare website by reviewing the articles about healthcare websites and ones about other

Table 33.3 Website marketing activities of healthcare providers in Danang

Dimensions	Items	% of healthcare centers
Information dimension	– Medical information	73.91
	– Information of physicians and clinicians	21.74
	– Links to physicians and clinicians	21.74
	– Maps/driving directions	43.48
	– Facilities	47.83
	– Services offered	86.96
	– Healthcare event information	34.78
	– Employment opportunities	52.17
Communication dimension	– Contact information	95.65
	– Access to test results or personal medical records	4.35
		17.39
	– Chat online	91.30
	– Interactive forms	82.61
	– Search functions	30.43
	– Other language options	17.39
	– Frequently asked questions	
Transaction dimension	– Online reservation	65.22
Relationship dimension	– Patient reviews	8.70
	– Privacy policy	4.5
	– Special deals	13.04
	– Patient support	17.39
	– Loyalty programs	0
	– Personalization	0

types of services. This set of criteria can be further developed and tested in the future so that healthcare website operators or healthcare center managers can acknowledge what items they should have to create and maintain a good website about healthcare. Besides, this paper has facilitated another research using importance–performance analysis to consolidate the criteria and figure out which items are considered important and how they are perceived to be performing by the healthcare providers and patients. Another contribution of this paper is a brief review of how the healthcare websites in Danang are doing so that we can make them better. In the future, based on the results of this paper, another research using change propensity analysis to predict the future trends of the healthcare website marketing activities in Danang can be conducted. The results in this paper can also be used in further research studies on the online healthcare field. Some of the suggestions can be the studies on how the patients accept the online services from the healthcare centers, how the healthcare centers do better marketing via the Internet, and so on.

This paper still contains some limitations. First, the authors believe that more academic papers on website marketing activities, especially the healthcare website marketing ones, should be reviewed to make the evaluating criteria more valuable. Another thing that should be improved in further research studies is that the similarities and differences between healthcare services and other services should be clarified so that we can have a set of greater accurate criteria. The authors expect to overcome these limitations so that the next studies can have better quality.

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Chapter 34
Valuing Tourism Landscapes in Ba Vi National Park (Vietnam)

Dat Nho Tran, Linh Duy Thi Nguyen, and Nguyen An Thinh

Abstract The paper deals with an application of the travel cost method (TCM) to determine the value of entertainment and tourism in the National Park: a case study in Ba Vi National Park, and through a research logit model to assess factors affecting the tourist behavior of visitors in this area. The research results show that the entertainment and tourism value of Ba Vi National Park in 2017 is estimated at nearly 794 billion VND and tends to increase in the future. Traveler behavior in Ba Vi National Park varies due to factors: income, gender, age, educational level, interests, other interests, and purpose of the trip, in which the factors of education and income strongly influence the tourist behavior of visitors. Research results will help managers choose appropriate policies and management mechanisms to maintain and effectively use resources from the National Park and regional development toward sustainable development in the future.

Keywords Travel cost method (TCM) · Landscape value · Entertainment and tourism value · Ba Vi National Park · Vietnam

1 Introduction

Ba Vi National Park is a famous place with green spaces of mountains, rivers, lakes, and traditional villages. With these advantages, Ba Vi National Park has developed many types of tourism such as ecotourism, resort, cultural–spiritual tourism, and community tourism. The development of tourism as a tool to stimulate economic

D. N. Tran
General Directorate of Forestry, MARD, Hanoi, Vietnam

L. D. T. Nguyen
Hanoi University of Natural Resources and Environment (HUNRE), Hanoi, Vietnam

N. A. Thinh (✉)
VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam

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development in local area creates jobs and improves the lives of the local people (Schmallegger et al., 2010). However, not many people are aware of the recreational value of natural forests hidden behind many other direct values. Researching and assessing the landscape value of natural forests are therefore essential, especially in developing countries where natural forests are severely degraded because they have not been properly assessed. The study results contribute to further clarifying the value of forests in terms of tourism landscape as a basis for developing appropriate forest use management mechanisms that are true to its value.

Applying travel cost method (TCM) is a useful technique to estimate the recreational benefits based on economic value of national park visitation. TCM uses opinions of users on travel expense to consume public good to highlight the principal functions of national park. This study deals with an investigation of recreation behavior of park users in Ba Vi National Park, Vietnam. The paper is organized as follows: Section 2 introduces TCM methodology and questionnaires; the results are indicated in Sect. 3; and findings and limitations of the study are presented in Sect. 4.

2 Methodology

2.1 Travel Cost Method

TCM estimates the consumer surplus linked with traveling to the tourism destinations (Hailu and Thoyer, 2005). The method is working on revealed preferences with the assumption that environmental values are investigated by real choices to create a recreation demand curve. Sustained costs provide an estimation of the value of visitors' recreational experience. The quantity of recreation is valued as the number of trips that tourists undertake in a given timespan, or days spent in a destination. The travel cost sustained for the round trip presents the associated unit cost. Other costs (food and accommodation, costs for equipment, and licenses) are encompassed (Ezebilo, 2016). Visitors' willingness to pay (WTP) for a marketed good is based on the quantity demanded at different prices. Because TCM uses the time and travel cost expenses to signify the price of access to the destinations, the number of trips that a visitor makes at different travel costs are estimated using a WTP. The zonal travel cost acquires an aggregate demand curve. Most of the visitors prefer lower costs of travel because of actual travel costs and time costs. Other factors affecting TCM are incomes, personal interest, and experiences of visitors for destinations. The inputs of TCM are as follows: (1) number of trips from each origin zone; (2) demographic background of visitors from each zone; (3) travel cost per mile; and (4) value of time used for travel, or the time cost of the previous travel (McConnel and Strand, 1981).

The information of the number of visits for each region is collected by questionnaire surveys. The visit rate in each region is calculated using the formula:

$$\mathrm{VR} = \frac{\left(\frac{V_i}{n}\right)N \times 12 \times 1000}{P} \tag{34.1}$$

where VR is the visit rate (number of trips/1000 people/year); V_i is the numbers of visitors from region i; n is the sample size; N is the total number of visitors in a month; and P is the population of region i.

Tourism demand function can be linear or semi-logarithmic:

$$V_i^0 = f(\mathrm{TC}_i) \tag{34.2}$$

where i is region i and V_i is the percentage of tourists per 1000 inhabitants at the entry fee of zero.

Consumer surplus for each region is estimated using tourism demand function:

$$\mathrm{CS}_i = \frac{\mathrm{POP}_i}{1000} \times \int_{\mathrm{TC}_0}^{\infty} f(\mathrm{TC}_i, Y_i, Ps_i, S_i)d\mathrm{TC} \tag{34.3}$$

where CS_i is the consumer surplus for region i; TC_i is total current travel expense of travelers in region i; and POP_i is the population of region i.

2.2 Questionnaires and Data Collection

We designed a questionnaire for TCM, which is divided into two parts: personal background (name, demography, age, gender, education, and monthly income) and trip information (departure place, the total number of days to travel, travel expenditure including the accommodation fee, type of accommodation, provinces, different used travel vehicles, their weights on certain destinations, and relative information and attitudinal questions toward the park). The survey is organized in every weekend from October 2018 to November 2018. Totally, 354 visitors are selected to survey on the field. All respondents select the item "agree for survey" before they provide information according to the questionnaire.

3 Results

Table 34.1 presents the results of regional zoning for domestic tourists in the Ba Vi National Park. Seven regions are determined according to the distance from Ba Vi National Park to each departure site. The nearest region (region 1) is the same place with Ba Vi. The farthest region (region 7) is Central Coast of Vietnam, which is far from study area over 500 km. One-way travel cost is calculated by travel distance

Table 34.1 Regions by tourist origin (domestic tourists)

Region	Distance (km)	Province	Population
1	10	Ba Vi (Van Hoa, Tan Linh)	25,135
2	30	Phu Phuong; Phong Van; Phuc Tho; Son Tay;	400,767
3	50	Ha Noi; Hoai Duc; Nam Tu Liem; Bac Tu Liem; Vinh Phuc; Phu Tho;	8,007,358
4	70	Chuong My; Hoang Mai; Thanh Xuan; Ba Đình;	1,117,742
5	200	Long Bien; Hung Yen; Hai Phong; Bac Ninh	4,488,700
6	500	Nghe An; Thanh Hoa;	6,533,000
7	>500	Khanh Hoa; Hue	1,546,124

Source: Survey data of the research team

Table 34.2 Travel expense to Ba Vi National Park

Region	Distance (km)	Time (day)	Travel expense (VND)	Time cost (dong)	Surcharge (VND)	Total cost (VND)
1	10	1	30,488.32	245,433,767	100,000	375,922,087
2	30	1.2	91,464.96	294,520,520	166,000	551,985,48
3	50	1.11	152,441.6	272,431,481	310,416.7	735,289,781
4	70	1.33	213,418.24	326,426,910	220,416.7	760,261,85
5	200	1.18	609,766.4	289,611,845	270,454.5	1,169,832,745
6	500	1	1,524,416	245,433,767	340,000	2,109,849,767
7	850	2.25	2,591,507.2	552,225,976	1,875,000	5,018,733,176

Source: Survey data of the research team

and type of used vehicles. Time includes both travel time. Cost for time is calculated from total monthly income.

Table 34.2 summarizes the composition of travel cost for domestic travelers from seven regions. The results show that transportation costs account for a large part of the total costs for areas far from the survey sites. Table 34.3 presents the results of calculating the visiting rate per 1000 people (which is the model-dependent variable) in a year from seven regions of domestic visitors. This proportion represents the tourism demand in Ba Vi National Park, so it will be inversely proportional to the cost (with distance), so the smaller the value the farther is the region.

Figure 34.1 presents a demand curve for Ba Vi National Park. Visiting rate for each zone is determined as an actual number of visits per zone divided by zonal population. In the two-step log regression model, visiting rate (Y) is the dependent variable and travel cost (X) is the independent variable:

Table 34.3 Rate of visits per 1000 people per year from all regions

Region	Total population (thousand people)	Visitor rate in the sample (%)	Number of people participating in tourism in the ~~P~~park/-1000
1	265,135	4.109	22.317
2	400,767	6.849	24.609
3	8.007,358	76.71	13.795
4	1.117,742	15.07	19.415
5	4.488,700	16.44	5.274
6	6.533,000	2.739	0.604
7	1.546,124	5.479	5.103

Source: Survey data of the research team

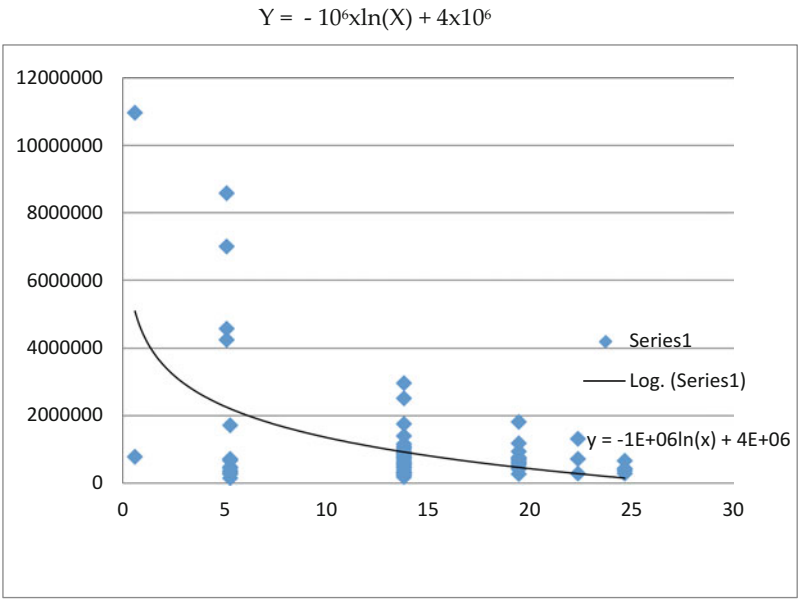

Fig. 34.1 Demand curve about recreation at Ba Vi National Park

$$Y = 10^6 \text{xln}(X) + 4 \times 10^6$$

The monetary value of tourism in Ba Vi National Park in 2017 was about 794,403 billion VND (equivalent to $US 35.1 billion, with VND/$US rate in 2017 is 22,650). This is the value that Ba Vi National Park produces for the economy in a year, not the Park's revenue. This value is distributed to, first, tourists to Ba Vi National Park, who benefit from recreational activities (in the form of consumer surplus) and for companies carrying passengers and service providers such as hotels, restaurants, and travel companies.

Consumer surplus is estimated at 472,280 billion VND (approximately $US 20.9 million), which can be interpreted as a recreational benefit of Ba Vi National Park in 2017. This is the value that tourists gain or add value when they conduct recreation in Ba Vi National Park. These data also refer to the willingness to pay (WTP) for the natural resources of Ba Vi National Park, such as water, air, flora and fauna, and landscape. However, it does not refer to the unused value of Ba Be National Park. Part of tourism value is distributed to the local economy in the form of visitor spending.

4 Conclusions and Discussion

Along with economic growth, the process of industrialization, modernization, and urbanization is increasing, making the environment increasingly polluted. Today, many people understand that protecting the environment and natural resources is also protecting their lives. But besides that, people still strive to destroy nature because according to them "the environment is common, is infinite," as it is necessary to quantify the values that the environment brings, contributing to raising people's awareness and protecting natural resources.

The results of calculation of recreational value of Ba Vi National Park show that:

- The recreational value of Ba Vi National Park tourist area is determined by the method of regional tourism cost with the number of tourists in 2018 are 794,403 billion VND.
- The value of entertainment is only for domestic visitors, not including benefits for international visitors.
- The recreational value calculated is higher than the revenue from recreational activities of Ba Vi National Park, which is explained as the revenue from recreational activities only includes entrance fees and some other revenues, while that entertainment value is the benefit that visitors get from leisure.

Compared with the revenue and benefits of the resort, the benefits of the resort are much larger, which prove that the landscape value of Ba Vi National Park is quite large. Combined with the fact that the entrance fee of Ba Vi National Park is at an average level, it indicates the need to raise the entrance fee, which creates an additional source of revenue for conservation and enhancement of leisure value for visitors.

However, our research is still limited. During the survey of tourists due to lack of experience and short survey period, it did not gather much necessary information. The amount of information collected is similar to the number of other interviewees and is not very comprehensive and does not cover all the number of visitors from provinces and cities across the country. Therefore, the research results may still not completely reflect an objective.

TCM is a simple one and does not reflect the impact of environmental quality or income as well as many other factors on the demand function. Moreover, the

international visitor sample has not been collected in the model due to the fact that it is difficult to identify and is important because international visitors often combine tourism or research many locations across the country and the National Park is only one destination so it is difficult to determine the cost distribution. The results of this research will be a guide for further research development.

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Chapter 35
An Empirical Analysis of the Factors Influencing the Switching Intention from Cash Payment to Mobile Payment in Vietnam

Thao An Tran and Yen Vinh Thi Tran

Abstract Mobile payment with huge advantages in the independence of time and location offers customers faster, safer, and easier payment experience than traditional methods. However, before accepting innovation technology, users must decide to continue paying by the current method or switching to one of its substitutes. To understand the main determinants that affect customers' switching intention from cash payment to mobile payment in Vietnam, this study illustrates a conceptual model that combined the technology acceptance model (TAM) and push–pull–mooring (PPM) framework. The results show that alternative attractiveness is the most impact pull factor, followed by mobility. Regarding push factors, low satisfaction and inconvenience of cash payment have great influences on both perceived ease of use and perceived usefulness. Finally, regarding mooring effects, personal innovativeness has the significant influence on perceived usefulness, perceived ease of use, and switching intention, whereas perceived risk has a negative influence and the effect of mobile payment knowledge is not confirmed. Moreover, the relationships between the variables are influenced only by habit, while the impact of switching cost is not found.

Keywords Intention to switch · Mobile payment · Push–pull–mooring framework · TAM

T. A. Tran (✉)
Vietnam-Korea University of Information and Communication Technology, the University of Da Nang, Da Nang, Vietnam

Y. V. T. Tran
Danang Architecture University, Da Nang, Vietnam

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1 Introduction

The explosive growth of smart devices and the Internet, as well as the rapid development in Fintech services, helps consumers enjoy convenience and comfort financial services. In particular, mobile payment dominates with enormous benefits, such as convenience, time, place, and speed. Facing many options, users must decide to switch to new technology with a lot of advantages as well as risks or staying with the incumbent payment method. According to the statistic report (https://www.statista.com), 42.66 million Vietnamese will use the smartphone in 2022, which is a motivation for the growth of the mobile payment system. Nevertheless, cash is still the most popular payment method with 90% of users. The previous literature on mobile payment only focuses on identifying the main factors that affect the acceptance of mobile payment. In addition, switching from incumbent method payments to mobile payment has not been explored yet. This study aims to fill theoretical and factual gaps by researching the key factors influence switching intention from cash payment to mobile payment in Vietnam.

2 Literature Review

2.1 Mobile Payment and Current Status of Payment in Vietnam

Mobile payment relates to any payment that uses a mobile device to initiate, activate, and confirm a payment transaction for goods, services, and bills (Au & Kauffman, 2008). Besides, the usage fields of mobile payment are not limited from online transactions as m-commerce and e-commerce to offline at the cash desk, stores, or restaurants (Turowski & Pousttchi, 2013). In Vietnam, quick recognition (QR) is the most popular mobile payment method provided by most of the banks and many financial companies. On the other hand, Samsung Pay has just been provided in Vietnam since September 2017. Samsung Pay allows making transaction through near-field communication (NFC) and magnetic secure transmission (MST) technology. Samsung Pay rapidly developed in Vietnam market where Apple Pay and Android Pay cannot because it is more suitable for Vietnam current payment infrastructure where 98% of POS facilities use MST technology. Cash is still king with 90% of users (State Bank of Vietnam). Although most of the Vietnamese have a bank account, cash withdrawal from ATM reaches 86.81% of total domestic card transaction value (State Bank of Vietnam). Cash on delivery also is preferred than other payment methods like bank transfer and the credit card for online shopping.

2.2 Technology Acceptance Model (TAM)

Davis (1989) developed TAM to determine the factors that influence consumers' intention to use new technology and explain users' behaviors. Two key factors were proposed in TAM, namely perceived ease of use and perceived usefulness. Lee et al. (2011) claims that technology acceptance and switching are different. While technology acceptance is just the act of using technology to perform a certain task, switching concerns to the tendency or intention to change from one method to the others. Therefore, Lee et al. (2011) modified the original TAM to explain intention to switch from offline bank to online bank. Similarly, in this study, "intention to use" was modified as "intention to switch." This study adapted this modified TAM to study switching intention from cash payment to mobile payment.

2.3 The Push–Pull–Mooring (PPM) Framework

PPM framework was developed based on the "Law of Migration" of Ravenstein (1885), which illustrates the impact of push-and-pull effects on human migration from one place to another (Lee, 1966). Bansal et al. (2005) suggested that the PPM framework can also be applied to research individuals' switching behavior in the marketing field shifting from one provider to another. PPM has been modified and applied in wide different fields of studies from service industry (Keaveney, 1995) to credit cards (Burnham et al., 2003) and mobile telecommunication services (Kim et al., 2004).

3 Model Development and Hypotheses

3.1 Push Factors

Push factors illustrate negative factors of the existing service or product or provider that motivate customers to switch to one of its substitutes (Lee, 1966; Moon, 1995). In this study, push factors show a disadvantage of cash payment that is studied through low satisfaction at cash payment and inconvenience of cash payment.

3.1.1 Low Satisfaction at Cash Payment

In marketing literature, satisfaction is an important factor that has a positive impact on the repurchase intention and loyal of customers (Oliver, 1999; Chang et al. 2014a, b). Low levels of satisfaction are the reason for switching intention of customers from an incumbent product (Burnham et al., 2003; Kim et al., 2004).

Hence, in this research, low satisfaction of customer when using cash payment is the push factor that motivates users to switch to mobile payment. Therefore, we hypothesize.

H1a: Low satisfaction at cash payment positively influences on perceived usefulness.
H1b: Low satisfaction at cash payment positively influences on perceived ease of use.

3.1.2 Inconvenience of Cash Payment

With cash payment, users must carry an amount of cash in the wallet and suffer uncomfortable feelings, such as worrying about losing their wallet or limiting in spending what they have on hand or just a "thick" or "heavy" wallet. In terms of the payment speed, cash is lower than credit cards or mobile payment. With mobile payment, customers can make the financial transaction very simple for the goods or services at anytime from anywhere, save time, and reduce personal risk (Zhou, 2011). Moreover, Keaveney (1995) and Lai et al. (2012) pointed out that inconvenience is a negative factor that pushes customers away from the existing service provider, leading to the following hypothesis.

H2a: Inconvenience of cash payment positively influences on perceived usefulness.
H2b: Inconvenience of cash payment positively influences on perceived ease of use.

3.2 Pull Factors

Pull factors refer to positive attributes or advantages of alternative service providers over the incumbent (Moon, 1995; Bansal et al., 2005). In this research, pull factors show the advantage of mobile payment that is measured through alternative attractiveness and mobility.

3.2.1 Alternative Attractiveness

Alternative attractiveness is defined as customers expecting the outcome achievable or characteristics of the alternative provider better than those of the incumbent provider (Park et al., 2010). In other ways, customers feel satisfied with competing alternative service provider in the marketplace (Chang et al. 2014a, b). The advantages of mobile payment such as speed, mobility, availability, conveniences, and reducing personal risk are more dominant than other payment methods (Nickerson, 2013; Teo et al., 2015). Furthermore, customers are attracted by promotion programs from mobile payment providers. Thus, we have.

H3a: Alternative attractiveness positively influences on perceived usefulness.
H3b: Alternative attractiveness positively influences on perceived ease of use.

3.2.2 Mobility

Kleinrock (1996) claimed that mobility is the key advantage of mobile payment. Mobility means that users can access the ubiquitous services regardless of time and place (Au & Kauffman, 2008). In respect of mobile payment, mobility is explained as the ability of customer's accesses and can make financial transactions anywhere and anytime without intermediaries through their mobile devices (Dahlberg et al., 2003). Compared with traditional payment methods, mobile payment allows users to make payments for goods, services, and bills flexibly and more freedom and value (Amberg et al., 2004). Moreover, the significant positive relationships among mobility, the perceived usefulness, and perceived ease of use were confirmed in previous studies (Dahlberg et al. (2003) and Tran et al. (2018)). Therefore, we hypothesize.

H4a: Mobility positively influences on perceived usefulness.
H4b: Mobility positively influences on perceived ease of use.

3.3 Mooring Effects

The impacts of culture, social elements, and spatial or personal factors on users' decision staying with a current service provider or switching to others are referred as mooring effect (Bansal et al., 2005). In this study, mooring effects were measured through mobile payment knowledge, personal innovativeness, and perceived risk.

3.3.1 Mobile Payment Knowledge

Users often confront substantial risk when changing service provider, especially in the IT field because of unidentified outcomes (Sharma & Patterson, 2000). Users who have a broad knowledge of the products or services or type of providers in the marketplace will have better skills to evaluate alternatives, thereby reducing risks and easily moving from providers to another (Bell et al., 2005). Customers will recognize that mobile payment is an optimal alternative for cash payment because of its convenience, and safety if they have a high degree of knowledge of the mobile payment. Thus, we have.

H5a: Mobile payment knowledge positively influences on perceived usefulness.
H5b: Mobile payment knowledge positively influences on perceived ease of use.

3.3.2 Personal Innovativeness

Rogers (1983) claims that personal innovativeness is the degree of an individual to actively explore new information systems and technologies. The great positive effect of personal innovativeness on the acceptance of new technologies is recognized in a lot of previous studies (Agarwal & Prasad, 1998; Tran et al., 2018). In switching research marketing, individual with high personal innovativeness exhibits the willing to take uncertainty result and risk of alternatives if the substitutes are better than incumbent product or service (Han et al., 2010; Lopez et al., 2006). Therefore, we hypothesize.

H6a: Personal innovativeness positively influences on perceived usefulness.
H6b: Personal innovativeness positively influences on perceived ease of use.

3.3.3 Perceived Risk

Perceived risk relates to the expectation of losses or sacrifices in purchasing or using a risk technology (Sweeney et al., 1999; Zhou, 2011; Wong et al., 2012). Like other payment services, private financial informations such as the identity, confidential data that are required to transmit and store in the mobile payment process, can be stolen by hackers to access and conduct unauthorized monetary transactions. Therefore, we hypothesize.

H7a: Perceived risk positively influences on perceived usefulness.
H7b: Perceived risk positively influences on perceived ease of use.

3.4 Perceived Ease of Use, Perceived Usefulness, Intention to Switch

The user's behavioral intentions in the TAM are determined by perceived ease of use and perceived usefulness (Davis, 1989). The perceived ease of use describes a clear and understandable perception when a customer uses the new service. While perceived usefulness is explained that customers believe that using the new service will bring many benefits for them and develop their task performance. According to the modified TAM (Lee et al., 2011), we develop the following hypothesis.

H8: Perceived ease of use positively influences on the perceived usefulness.
H9: Perceived ease of use positively influences on switching intention to mobile payment in Vietnam.
H10: Perceived usefulness positively influences on switching intention to mobile payment in Vietnam.

3.5 *Moderator Effects*

3.5.1 Switching Cost

The switching cost is the main negative factors because people only switch when the benefits should outweigh the costs (Lee et al., 2001; Anderson, 1994). The costs of switching from cash payment to mobile payment are both the economic costs, including the actual mobile equipment costs, transaction costs, and access fees (Wu & Wang, 2005) and nonmonetary costs as time and effort, emotional and psychological cost, unfamiliarity, uncertainty, and learning costs (Han et al., 2011; Jones et al., 2002). In this research, switching cost has a moderating effect on customers' decision to switch from cash payment to mobile payment.

H11: Switching cost will moderate the relationships between the variables.

3.5.2 Habit

Habit is the main barrier for switching because people like to stay with the current product or service, which becomes a familiar part of their daily routine (Jones et al., 2002). In this study, payment habit means cash is mostly used to pay for purchasing services or product and COD is chosen to pay for online transactions. Clearly, the intention to switch from cash payment to mobile payment can be moderated by habit. Thus, we hypothesize.

H12: Habit will moderate the relationships between the variables.

A conceptual framework for the paper is developed including 17 hypotheses as shown in Fig. 35.1.

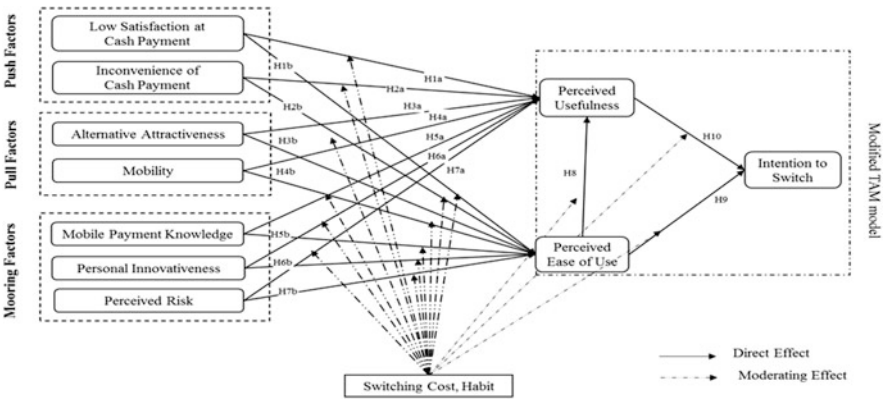

Fig. 35.1 Research model

4 Research Method

The questionnaire was redrawn and modified from literature to match the switching to mobile payment context. A seven-point Likert scale from 1 to 7 corresponding to strongly disagree to strongly agree was applied for all constructs. Four items on low satisfaction at cash payment were adapted from Oliver and Swan (1989). Three items on the inconvenience of cash payment were adapted from Verhoef and Langerak (2001). Four items for attractive alternatives from Kim et al. (2006) and Bansal et al. (2005) were adapted and personal innovativeness with three items from Goldsmith and Hofacker (1991) and Agarwal and Prasad (1998). Four items on mobility were adapted from Huang et al. (2007). The scale of mobile payment knowledge (four items) was revised from Sharma and Patterson (2000). The scale of perceived risk (three items) was revised from Brown et al. (2003) and Tan and Teo (2000). Five items for habit from Limayem et al. (2007) and Venkatesh et al. (2012) were adapted and switching cost with five items from Zhang et al. (2008) and Jones et al. (2002). We adapted the perceived usefulness (four items), perceived ease of use (four items), and intention to switch (four items) from Davis (1989) and Venkatesh and Davis (2000). The survey was conducted randomly on Vietnamese from April to July 2019. Among the 420 questionnaires distributed, 406 questionnaires were chosen to analyze after removing 14 negative questionnaires.

5 Data Analysis and Results

5.1 Demographic Analysis

Table 35.1 illustrates the characteristics of respondents. Most of the responses are generated by a male, which occupied 63.05% of our sample size, whereas female just accounts for around 36.95%. Regarding age, respondents under 35 years old

Table 35.1 Sample demographics

Demographic	Category	Count	%	Demographic	Category	Count	%
Gender	Male	256	63.05	Age	Under 25	92	22.66
	Female	150	36.95		26–35	160	39.41
Career	Student	127	31.28		36–45	79	19.46
	Office worker	125	30.79		Over 45	75	18.47
	Self-employed	73	17.98	Monthly income (million VND)	Under 5	166	40.89
	Housewife	61	15.02		5–10	145	35.71
	Others	20	4.93		10–15	47	11.58
					Over 15	48	11.82

dominated (62.07%). In terms of income, the respondents are mainly distributed under ten million per month (76.60%). In addition, the majority of respondents are students (31.287%) and office workers (30.79%).

5.2 *Measurement Model Assessment*

5.2.1 Reliability and Validity

Cronbach's alpha was applied to check the internal consistency and reliability of the items. Cronbach's alpha test results (Table 35.2) show the value in all cases (0.796~0.913) over 0.7, which implies that the data are reliable. The exploratory factor analysis (EFA) was performed, which divided factors into 12 components. All items were well loaded with factor loading more than 0.5.

5.2.2 Measurement Model Assessment

Confirmatory factor analysis (CFA) was assessed to check reliability and construct validity. As the CFA results, the seven model-fit measures were satisfactory, which is good evidence for the validity of the model ($\chi 2 = 871.752$; df = 584; $\chi 2$/df = 1.493; CFI = 0.967; NFI = 0.908; IFI = 0.968; RMSEA = 0.035). According to Table 35.3, the average variance extracted (AVE) for all cases (0.501~0.785) was higher than 0.5 and all CR values also exceeded 0.7 (0.801~0.916). These values showed strong evidence of convergent validity (Fornell & Larcker, 1981). To test the discriminant validity of the constructs, we compared the square root AVE of each construct with the correlation coefficients. The correlation matrix in Table 35.3 illustrates that the highest value of correlation coefficient (0.644) is smaller than the lowest values of square root AVE (0.708), indicating the evidence of the discriminant validity (Fornell & Larcker, 1981).

Table 35.2 The result of Cronbach's alpha check

Construct name	Variable	Cronbach's α	Construct name	Variable	Cronbach's α
Low satisfaction at cash payment	LS	0.894	Inconvenience of cash payment	IC	0.855
Attractive alternatives	AL	0.822	Mobility	MB	0.899
Mobile payment knowledge	KN	0.796	Personal innovativeness	IN	0.913
Perceived risk	RI	0.837	Switching cost	CO	0.953
Habit	HA	0.913	Perceived usefulness	PU	0.859
Perceived ease of use	PE	0.866	Intention to switch	IS	0.873

Table 35.3 Convergent validity and correlation matrix of latent constructs

	CR	AVE	AL	MB	LS	PE	IN	IC	KN	PU	IS	RI
AL	0.824	0.610	**0.781**									
MB	0.900	0.693	0.426	**0.832**								
LS	0.896	0.682	0.452	0.506	**0.826**							
PE	0.873	0.633	0.524	0.502	0.541	**0.796**						
IN	0.916	0.785	0.161	0.228	0.250	0.333	**0.886**					
IC	0.857	0.599	0.573	0.593	0.554	0.562	0.185	**0.774**				
KN	0.801	0.501	0.254	0.357	0.463	0.355	0.178	0.387	**0.708**			
PU	0.861	0.609	0.601	0.567	0.587	0.644	0.310	0.600	0.403	**0.780**		
IS	0.875	0.637	0.577	0.643	0.558	0.546	0.195	0.665	0.490	0.632	**0.798**	
			⎓	⎓	⎓	⎓		⎓	⎓	⎓	⎓	
RI	0.838	0.633	0.186	0.217	0.194	0.261	0.040	0.184	0.190	0.299	0.287	**0.795**

Table 35.4 Results of estimated structural coefficients

Hypotheses	Path	Std. weights	S.E.	C.R.	*P*	Results	R^2
H1a	LS → PU	0.155	0.043	2.794	0.005	Supported	0.650
H2a	IC → PU	0.128	0.059	2.013	0.044	Supported	
H3a	AL → PUS	0.256	0.051	4.531	***	Supported	
H4a	MB → PU	0.171	0.044	3.206	0.001	Supported	
H5a	KN → PU	0.079	0.056	1.620	0.105	Not supported	
H6a	IN → PU	0.099	0.034	2.403	0.016	Supported	
H7a	RI → PU	−0.116	0.043	−2.714	0.007	Supported	
H1b	LS → PE	0.187	0.060	3.112	0.002	Supported	0.504
H2b	IC → PE	0.196	0.083	2.817	0.005	Supported	
H3b	AL → PE	0.218	0.070	3.641	***	Supported	
H4b	MB → PE	0.122	0.061	2.088	0.037	Supported	
H5b	KN → PE	0.046	0.079	0.855	0.392	Not supported	
H6b	IN → PE	0.183	0.047	4.138	***	Supported	
H7b	RI → PE	−0.124	0.059	−2.669	0.008	Supported	
H8	PE → PU	0.173	0.046	2.932	0.003	Supported	
H9	PE → IS	0.213	0.063	3.372	***	Supported	0.494
H10	PU → IS	0.546	0.086	8.157	***	Supported	

*** indicates 'p-value is less than 0.001'

5.3 Structural Model Analysis

Structural equation modeling (SEM) was used to examine the hypotheses of the proposed model. The model fitting indices of the constructs model ($\chi 2 = 973.189$; df = 591; $\chi 2/df = 1.647$; CFI = 0.957; NFI = 0.897; IFI = 0.957; RMSEA = 0.040) met the appropriate levels. Inspection of the path coefficients was assessed to check the research hypotheses. Table 35.4 and Fig. 35.2 show the results of the tests of the

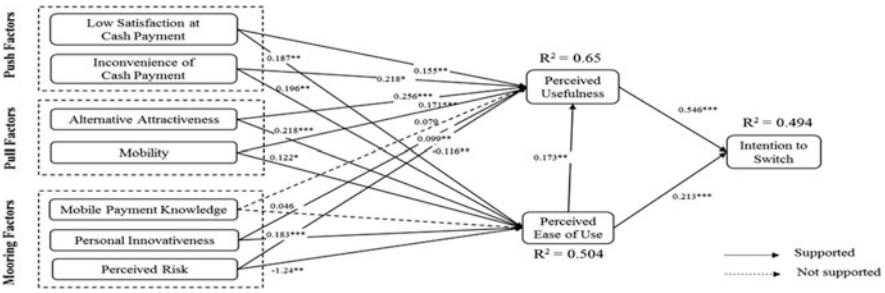

Fig. 35.2 The result of hypothesis test

hypotheses with 15 of the 17 hypotheses that were adopted and two hypotheses were rejected. In the push factors, low satisfaction at cash payment and inconvenience of cash payment were both found to have a significantly positive effect on perceived usefulness ($\beta = 0.155$, $p = 0.005$ and $\beta = 0.128$, $p = 0.044$, respectively) and perceived ease of use ($\beta = 0.187$, $p = 0.002$ and $\beta = 0.196$, $p = 0.005$, respectively), thus supporting H1a, H2a, H1b, and H2b. In the pull factors, alternative attractiveness has the most significant effects on perceived usefulness ($\beta = 0.256$, $p = 0.000$) and perceived ease of use ($\beta = 0.218$, $p = 0.000$), supporting H3a and H3b. Moreover, the influence of mobility on perceived usefulness ($\beta = 0.171$, $p = 0.001$) and perceived ease of use ($\beta = 0.122$, $p = 0.037$) also confirmed, thus supporting H4a and H4b. Finally, regarding mooring effects, personal innovativeness has significant impact on perceived usefulness ($\beta = 0.099$, $p = 0.016$) and perceived ease of use ($\beta = 0.183$, $p = 0.000$), whereas perceived risk has a negative impact ($\beta = -0.116$, $p = 0.007$ and $\beta = -0.124$, $p = 0.008$, respectively), thus supporting H6a, H7a, H6b, and H7b. However, the effect of mobile payment knowledge is not confirmed ($\beta = 0.079$, $p = 0.105$ and $\beta = 0.046$, $p = 0.392$, respectively), thus rejecting H5a and H5b. In addition, H8, H9, and H10 showed a positive relationship between perceived ease of use, perceived usefulness, and switching intention in the TAM that were well-supported at a significance level of 0.001. Results found that perceived ease of use exerts the great impact on perceived usefulness ($\beta = 0.173$); perceived usefulness and perceived ease are the key drivers of intention to use ($\beta = 0.546$ and $\beta = 0.213$, respectively).

Regarding explanatory power, the model explained 65.0% of the variation in perceived usefulness and 50.4% of the variation in perceived ease of use. Moreover, the switching intention from cash payment to mobile payment was explained by 49.4% of the variance in the model. To summarize, Fig. 35.2 presents the estimation results.

5.4 The Test of the Moderating Effect

A pairwise parameter comparison was analyzed to test the hypothesis regarding the moderation of switching cost and habit. To do so, respondents were divided into low switching cost group (group A) with an average point less than or equal to 4 with 101 persons, and the remaining 305 persons were categorized in group B with high switching cost. Similarly, high habit group (group C) contained 122 respondents with an average point greater than 4 and 294 respondents belonged low habit group (group D). To verify the difference between groups, pairwise parameter comparisons were conducted by computing the critical ratios for differences between parameters (Z-statistics) that were confirmed with statistical significance level of DBP ± 1.96. As shown in Table 35.5, there is no difference between the low and high switching cost groups, thus rejecting hypothesis 11.

As can be seen in Table 35.6, the relationship between inconvenience of cash payment and perceived usefulness is affected by the different test statistic -2.216^{**} between low and high habit groups. By contrast, it was found that high habit group is more sensitive to the different test statistic 3.551^{***} in the effect of perceived ease of use on perceived usefulness. In addition, the effect of mobile payment knowledge on perceived ease of use was more significant in group C than group D, and the different test statistics are -2.484^{**}. However, it was found that group D was more sensitive to the different test statistic 2.114^{**} in the effect of personal innovativeness on perceived ease of use. Finally, the relationship between perceived ease of use and switching intention is affected by the different test statistic -2.194^{**} between group C and group D.

6 Discussions

Regarding pull factors, the alternative attractiveness is the greatest significant positive factor that has effects on switching intention to mobile payment in Vietnam, both directly and indirectly via perceived usefulness and perceived ease of use. This result can probably be best explained by customers' expectation about an excellent payment method based on the huge advantage of mobile payment. In addition, competitive benefits of mobile payment service are extended in terms of discounts or promotions programs such as the high-value gifts or reduction in the total bill, which are often offered by mobile payment service providers. Besides, the attractiveness of mobile payment is climbed because mobile payment is introduced on social media by the Vietnamese government in order to aim the electronic payment goal by 2020. Regarding mobility, the results also illustrate that mobility played a crucial role in predicting switching intention to mobile payment. Previous studies have emphasized the role of mobility in previous studies about the adoption of mobile payment (Liu & Tai, 2016; Kim et al., 2010; Daştan & Gürler, 2016; Tran et al., 2018). Mobility is the main advantage of mobile payment. Only with a

Table 35.5 Results testing moderator effect of switching cost

Hypotheses	Path	Standardized estimate		Critical ratio for differences between parameters	Result
		Group A (101)	Group B (305)		
H1a	LS → PU	0.145	0.112*	−0.328	No difference
H2a	IC → PU	0.131	0.104	−0.231	No difference
H3a	AL → PUS	0.079	0.238***	1.582	No difference
H4a	MB → PU	0.079	0.153**	0.637	No difference
H5a	KN → PU	0.268*	0.028	−1.636	No difference
H6a	IN → PU	0.022	0.098*	0.987	No difference
H7a	RI → PU	−0.100	−0.134**	−0.179	No difference
H1b	LS → PE	0.256	0.156*	−0.637	No difference
H2b	IC → PE	−0.006	0.339***	1.906*	No difference
H3b	AL → PE	0.132	0.297***	1.085	No difference
H4b	MB → PE	0.385*	0.027	−1.946*	No difference
H5b	KN → PE	−0.262	0.121	1.667*	No difference
H6b	IN → PE	0.166	0.213***	0.388	No difference
H7b	RI → PE	−0.192	−0.163**	0.093	No difference
H8	PE → PU	0.049	0.189**	1.471	No difference
H9	PU → IS	0.769***	0.630***	−0.653	No difference
H10	PE → IS	0.071	0.286***	1.734*	No difference

***$p < 0.001$, **$p < 0.01$, * $p < 0.05$ level of significance

smartphone, customers can make financial transaction anywhere, anytime which is not possible for cash payments.

Regarding push factors, the inconvenience and low satisfaction of cash payment were found to have a crucial effect on both perceived usefulness and perceived ease of use. The inconvenience and dissatisfaction of users for cash payment come from carrying a lot of money in the pocket, payment limited, slow speed, and facing the risk of being stolen. The introduction of innovation payment method, especially

Table 35.6 Results testing moderator effect of habit

Hypotheses	Path	Standardized estimate		Critical ratio for differences between parameters	Result
		Group C (112)	Group D (294)		
H1a	LS → PU	0.246**	0.067	−1.701*	No difference
H2a	IC → PU	0.430**	0.072	−2.216**	Difference
H3a	AL → PUS	0.439**	0.218***	−1.484	No difference
H4a	MB → PU	0.185*	0.133*	−0.545	No difference
H5a	KN → PU	0.288	0.115	−0.877	No difference
H6a	IN → PU	0.040	0.075	0.428	No difference
H7a	RI → PU	−0.195**	−0.067	1.421	No difference
H1b	LS → PE	0.031	0.220**	1.592	No difference
H2b	IC → PE	0.369**	0.191	−1.097	No difference
H3b	AL → PE	0.415***	0.199*	−1.551	No difference
H4b	MB → PE	0.132	0.126	−0.051	No difference
H5b	KN → PE	0.487**	−0.001	−2.484**	Difference
H6b	IN → PE	0.080	0.275***	2.114**	Difference
H7b	RI → PE	−0.102	−0.205*	−0.960	No difference
H8	PE → PU	−0.438*	0.223***	3.551***	Difference
H9	PU → IS	0.572***	0.742***	1.029	No difference
H10	PE → IS	0.446***	0.147	−2.194**	Difference

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$ level of significance

mobile payment with many benefits and conveniences is the reason for the rising dissatisfaction of customer for cash payment. The role of push effects on switching intention was found similar to the results in several previous works (Keaveney, 1995; Lai et al., 2012).

With respect to the mooring effect, the empirical evidence revealed that personal innovativeness was positively associated with both perceived usefulness and perceived ease of use, whereas perceived risk was confirmed to have a negative effect. Nevertheless, the impact of mobile payment knowledge was not found. The reason for this finding is straightforward that highly innovative individuals are willing to take risks to experience innovative technology and able to cope with high levels of uncertainty. The innovative persons often quickly recognize the potential benefits of

mobile payment that are motivating to drive them away from cash payment. As for perceived risk, the finding of the negative impact of perceived risk is consistent with previous mobile payment acceptance studies (Pham & Ho, 2015; Lu et al., 2011). Users worry about the safety of their private financial information during the mobile payment process and the chance of being swindled in the Internet environment. Risk and security are always the top concerns of consumers for financial transactions. Finally, related to mobile payment knowledge, although product understanding will help customers to use easily, experience confidently, and avoid risks. A usage, privacy, and security policy, and usefulness of mobile payment are introduced via promotional campaigns that increase the mobile payment knowledge of Vietnamese. What is more, the mobile payment process is simple, is fast, and is step-by-step-guided with specific illustrations via demo video. Thus, mobile payment is not a very difficult task and can be performed by many people.

Regarding the moderation test, while the moderating effect of habit was also confirmed, the impact of switching cost was not found. Most Vietnamese have habit of using cash payment popular in both online payment and offline payment. Although most people have bank accounts, cash withdrawals from ATMs are the most popular payment activity in Vietnam because of the habit of using cash. For online shopping, users prefer cash on delivery (COD) over other payment methods like bank transfer and credit card, accounting for 75%. If users have strong habit in using the incumbent product or service, it will become a great barrier that inhibits consumer switching. Ye and Potter (2007) have emphasized the role of the habit as a moderator in the acceptance switching of individual information technologies. Nevertheless, the switching cost would not moderate the relationship in the model. This can be explained by the fact that almost Vietnam users have already owned a smartphone; thus, the cost of purchasing mobile devices for mobile payment purpose is almost zero. Concerning nonmonetary costs, the mobile payment process is simple and fast; hence, the customers spend less effort to learn how to use it easily.

7 Conclusions

This research aims to explore the determinants that affect switching from cash payment to mobile payment in Vietnam. To achieve this goal, a research model was combined from modified TAM with PPM framework, which is the most favorite model in the switching field. The relationships of variables in the proposed model were assessed and further validated the moderating impacts on relationships including switching cost and habit.

The main contributions of this research are as follows: The results of empirical analysis show that both perceived usefulness and perceived ease of use are most affected by alternative attractiveness, which also indirectly influences the switching intention. Mobility and low satisfaction at cash payment are significant predictors of perceived ease of use, followed by inconvenience of cash payment and personal innovativeness. In addition, the results also point out that inconvenience and low

satisfaction at cash payment are the significant determinants that influence perceived usefulness, followed by personal innovativeness and mobility. However, perceived risk has a negative effect and the influence of mobile payment knowledge is not confirmed. Moreover, the results imply that switching intention from cash payment to mobile payment in Vietnam is more directly impacted by the perceived usefulness than perceived ease of use.

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Chapter 36
Trade Facilitation and Its Impacts on Vietnam's Trade

Huong Thanh Vu and Dai Duc Tang

Abstract Trade facilitation is particularly important for the developing economies whose trade costs have remained high because it helps improve efficiency of border procedures, boost trade flows, and promote participation in the global value chain. Given these benefits, trade facilitation has emerged as a key issue for the world trading system in recent years. In Vietnam, under the context of its active participation in international economic integration, trade has played an increasingly important role in the country's social and economic development. Therefore, Vietnam has made substantial attempts to reduce trade costs and time to facilitate trade activities. This paper aims at exploring the current situation of trade facilitation and its impact on Vietnam's trade. By adopting Enabling Trade Index as trade facilitation indicator and a case study of border administration, the paper points out that Vietnam's trade facilitation has moderately improved with the biggest achievement in market access, followed by infrastructure. The progress in border administration is mixed while Vietnam has performed worst in operating environment. In addition, the paper uses gravity model with data from 108 countries over the period 2008–2016 to assess the impact of trade facilitation on trade in Vietnam. The results show that trade facilitation has a more than proportionate impact on Vietnam's trade. An increase of Enabling Trade Index by 1% will result in an increase of 1.14% in Vietnam's trade value. Based on these results, the paper highlights some implications for Vietnam to further improve its trade facilitation performance.

Keywords Trade facilitation · Border administration · Gravity model · Enabling trade index · Vietnam

H. T. Vu (✉)
VNU-University of Economics and Business, Vietnam National University, Hanoi, Vietnam
e-mail: huongvt@vnu.edu.vn

D. D. Tang
Ritsumeikan Asia-Pacific University, Beppu, Japan

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1 Introduction

Trade facilitation is particularly important for the developing economies whose trade costs have remained high and not fallen as fast as those in the developed economies. Besides reducing trade cost, trade facilitation can bring about other benefits to nations such as improving efficiency of border procedures, boosting trade flows, and promoting participation in the global value chain (WTO, 2015). Given these benefits, trade facilitation has emerged as a key issue for the world trading system in recent years. After more than nine years of negotiation from July 2004, Trade Facilitation Agreement (TFA) was concluded in December 2013 at the ninth Ministerial Conference of the World Trade Organization (WTO) and was entered into force on February 22, 2017. TFA is the most substantive outcome of the WTO's first multilateral agreement with the expectation of reducing global trade costs by an average of 14.3%, and lowering the average time needed to import by 47% and the average time needed to export by 91%. TFA is forecasted to add up to 2.7% to world export growth and more than 0.5% to world GDP growth annually over the period 2015–2030 (WTO, 2015).

In Vietnam, under the context of its active participation in international economic integration, trade has played an increasingly important role in the country's social and economic development. Therefore, Vietnam has made substantial attempts to reduce trade costs and time to facilitate trade activities. Especially, within the framework of the ASEAN Economic Community (AEC), Vietnam has facilitated strongly border administration and logistic activities to promote trade (Nguyen et al., 2015). As a result, in 2017, Vietnam made improvement in business environment when being ranked 68th among 190 economies with 67.93/100 points, increasing from the rank of 82rd of 190 economies in the previous year (World Bank, 2016, 2017a, 2018). This improvement has created a strong incentive for Vietnam to accelerate trade. In 2017, total trade flows of Vietnam reached a peak of more than USD 490 billion (ITC, 2018), equivalent to an increase by 40% compared to 2016's trade level and nearly five times of 2007's level.

However, the rank of Vietnam in Doing Business Report is still low, implying a lot of tasks remaining for Vietnam to facilitate trade activities such as improving trade procedures, border management, information communication technology, and infrastructure. In addition, while there is comprehensive literature on the impact of trade facilitation on trade value at the regional and global scale, very little research has been done to assess trade facilitation in Vietnam and there is virtually no study conducted to quantify the impact of trade facilitation on Vietnam's trade. Under this premise, by adopting trade facilitation indicators, case study approach, and the gravity model, this paper seeks to fill these gaps by exploring the current situation of trade facilitation and estimating its impact on Vietnam's trade.

This paper is structured into five parts. Following the Introduction, the second part reviews past literature on trade facilitation and the third part describes methodology and data used. The fourth part analyzes the performance of trade facilitation in Vietnam and estimates the impact of trade facilitation on Vietnam's trade value. On

that ground, the paper draws out some policy implications for Vietnam to improve trade facilitation in the final part.

2 Literature Review

Trade facilitation has not been defined uniquely until now as its concept varies depending on context and involved parties. WTO (2015) defines trade facilitation as the simplification and harmonization of international trade procedures, while the World Customs Organization (WCO) considers trade facilitation as the avoidance of unnecessary trade restrictiveness. According to the Organization for Economic Co-operation and Development (OECD), trade facilitation is referred to as policies and measures aimed at easing trade costs by improving efficiency at each stage of the international trade chain. The Asia-Pacific Economic Cooperation (APEC) defines trade facilitation as simplification and rationalization of customs and other administrative procedures that hinder, delay, or increase the cost of moving goods across international borders (ADB and ESCAP, 2013). In a study by Staples (2002), trade facilitation is associated with "reducing all the transactions cost associated with the enforcement, regulation and administration of trade policies." Sohn and Yoon (2001) stated that trade facilitation means all activities or policies aiming at reducing transaction cost by simplifying trade procedures, practices, and process, which results in increased trade. In light of the above definitions, trade facilitation can be understood as policies and measures to simplify and harmonize trade procedures aiming at reducing transaction costs and time in international trade activities.

The impact of trade facilitation on trade activities has been widely paid attention in the recent years. A wide consensus exists in the literature that trade facilitation helps reduce trade costs and promote trade flows.

At the global scale, Hausman et al. (2013) estimated that 1% reduction in processing costs and time for goods to cross border leads to 0.49% and 0.37% increase in bilateral trade, respectively. Similarly, Baccheta et al. (2012) proved that more efficient border administration is associated with higher value of trade. Baccheta et al. (2012) showed that a reduction of 1 day in trade procedures at the border may result in an increase of 4% in international trade value. According to Hufbauer and Schott (2013), the ad-valorem tariff-cut equivalents could increase total merchandise exports of developing countries by USD 569 billion (equivalent to 9.9%) and of developed countries by USD 475 billion (equivalent to 4.5%). The research findings by Korinex and Sourdin (2011) also indicated a positive relationship between trade facilitation and trade flows. The authors pointed out that higher trade facilitation measures would lead to an increase in global trade on average of 19%.

At the regional scale, Duval et al. (2018) showed that a full implementation of TFA measures is associated with an average of 15% trade cost reduction for the Asia-Pacific region. When incorporating full implementation of TFA measures with other paperless and cross-border trade facilitation measures, trade costs are projected

to decrease by more than 26%, equivalent to USD 1.2 trillion annually for the region. As a result, trade facilitation can both expand existing trade flows and create new trade flows. In the same vein, OECD (, 2012) found out that trade facilitation would potentially result in a trade cost reduction of 14.5% for low-income countries, 15.5% for lower-middle-income countries, and 13.2% for upper-middle-income countries. According to OECD (2012), enhancing trade facilitation also has a positive impact on trade value. As OECD (2012) realized, harmonization and simplification of documents lead to the most significant increase in trade for low-income countries and the sub-Saharan African countries. For the lower-middle- and higher-middle-income countries including the Asia, Latin America and Caribbean, Eastern Europe, and Central Asia groups of countries, the streamlining of procedures has strongest positive impacts on their trade.

At the national level, numerous studies have been conducted to quantify the impact of trade facilitation on trade flows. Using a sample of Chilean manufacturing exporting firms, Martincus and Blyde (2013) showed that an increase by 2 days in the duration of export inspections lowers exports by 16.4%. Moreover, exports would be 5.9% higher if all exports could be processed within 1 day. A study surveying firms in the Republic of Korea found out that businesses benefit up to USD 2.6 billion annually from the implementation of paperless trade, with savings accrued from reductions in labor costs, printing, and delivery of documents (Hyundai Research Institute, 2006). In Singapore, the introduction of an electronic Single Window for trade documents reduced processing times from 4 days to 15 min and lowered the cost of submission per document by 71% (Tsen, 2010).

Besides reducing trade cost and promoting trade value, trade facilitation also increases the trade diversification, reduces risk from shocks to international trade (Beverelli et al., 2015), encourages greater participation of developing economies in international trade (Duval et al., 2018), makes the deployment of resources more effective and efficient, improves the compliance of traders (Hellqvist, 2003), and reduces corruption and rent-seeking behavior (Hellqvist, 2003; World Bank, 2007).

While there is a huge literature on trade facilitation and its impact on trade value at the global and regional scale, as the author realized, very few studies have tackled these topics in Vietnam, of which two typical ones were conducted by Hammar (2008) and Tran (2016). Hammar (2008) outlined the main trade facilitation measures Vietnam undertook and discussed the effect of trade facilitation on trade development in Vietnam. The author found that Vietnam has pursued a number of trade facilitation measures in different aspects, namely simplification, transparency, harmonization, use of modern technology, and cooperation. Tran (2016) analyzed the status of trade facilitation in Vietnam in terms of international cooperation, technologies, and policies. Both Hammar (2008) and Tran (2016) concluded that despite the very positive development of trade facilitation in Vietnam, a number of challenges remain and need to be addressed such as complicated administrative procedures, corruption, and lengthy processes to complete import and export procedures. Besides two above studies, Vietnam's trade facilitation has been also mentioned in ARTNet (2008), Layton (2008), Koopman and Laney (2010), Otsuki (2011), and ESCAP (2017). However, these studies focused on investigating trade

facilitation measures of ASEAN as a whole rather than analyzing the situation of trade facilitation in each member country. In addition, the past literature has ignored quantifying the impact of trade facilitation on Vietnam's trade value.

In summary, trade facilitation in Vietnam is still an emerging issue for research and review of the past literature reveals two important gaps. Firstly, while many studies have been pursued with trade facilitation in the world, very few studies have tackled with analyzing and assessing trade facilitation in Vietnam. Secondly, there is virtually no study conducted to estimate the impact of trade facilitation measures on Vietnam's trade. By using the trade facilitation indicator, case study approach, and the gravity model, this paper seeks to fill the above two gaps and based on that ground proposes some policy implications for Vietnam in implementing and taking advantage of trade facilitation.

3 Methodology and Data

3.1 Methodology

3.1.1 Selection of Trade Facilitation Indicators

This paper adopts Enabling Trade Index (ETI) to analyze and assess trade facilitation in Vietnam. In fact, given the different definitions of trade facilitation, a wide range of trade facilitation indicators have been developed. Some common trade facilitation indicators include Bilateral Trade Costs introduced by ESCAP (the United Nations Economic and Social Commission for Asia and the Pacific) and World Bank, Doing Business indicators developed by World Bank, ETI by World Economic Forum, Trade Facilitation indicators by OECD, Logistic Performance Index and Trade Facilitation Indicators by World Bank, Trade Facilitation and Paperless Trade Implementation indicators by the United Nations Regional Commissions, and Liner Shipping Connectivity Index by the United Nations Conference on Trade and Development (UNCTAD).

Shepherd and Dennis (2011) used Doing Business indicators to investigate the impact of trade facilitation on export diversification in 118 developing countries. Also using Doing Business indicators, Haidar and Amin (2011) analyzed the relationship between country size and the number of documents required to export and import. Beverelli et al. (2015) adopted OECD's Trade Facilitation indicators to estimate the impact of trade facilitation on export diversification in the world, while Duval et al. (2015) and Duval et al. (2018) utilized Trade Facilitation and Paperless Implementation to investigate the impact of trade facilitation on trade costs in the Asia-Pacific region. By using ETI, Ramassamy et al. (2017) assessed trade facilitation along the belt and road initiative corridor, while Yadav (2014) estimated the impact of trade facilitation on parts and components trade in 77 countries over the period 2004–2007.

This paper approaches to use ETI as a trade facilitation indicator because this approach is not only common in the previous literature but also has two advantages over the use of other trade facilitation indicators. *Firstly,* the scope of ETI is broader than that of other trade facilitation indicators, and s*econdly,* the coverage of ETI database is quite wide, ranging from 2008 to 2016, which is adequate for estimating the gravity model for Vietnam. ETI is used to assess the quality of institutions, policies, and services facilitating the free flow of goods over borders. ETI is organized into four subindexes or pillars. Subindex A is market access, which measures the extent and complexity of a country's tariff regime, as well as tariff barriers faced and preferences enjoyed by a country's exporters in foreign markets. Subindex B refers to border administration, which assesses the quality, transparency, and efficiency of border administration of a country. Infrastructure is Subindex C, examining the availability and quality of transport infrastructure, services, and communication infrastructure necessary to facilitate the movement of goods within the country and across the border. The final is Subindex D, operating business environment, which measures the quality of key institutional factors affecting the business of importers and exporters in a country. The use of ETI enables the paper to examine and assess trade facilitation in Vietnam comprehensively in four abovementioned aspects.

3.1.2 Model Specification

The paper adopts gravity model, which is built on the assumption that bilateral trade flows depend on the economic size of the two countries and the distance between them, to quantify the impact of trade facilitation on Vietnam's trade. The gravity model was firstly applied to examine international trade flows by Timbergen (1962), and so far, it has become a useful and common tool in international trade literature to estimate trade flows. In the recent decades, numerous studies used the gravity model to quantity the impact of trade facilitation on trade value such as Iwanow and Kirkpatrick (2008), Hoekman and Nicita (2011), Yadav (2014), and Ramassamy et al. (2017).

Based on previous literature, the paper built a traditional gravity model supplemented by ETI variable representing trade facilitation as per Yadav (2014) and Ramassamy et al. (2017), and two dummy variables for Free Trade Agreements (FTAs) and landlockedness to assess the impact of trade facilitation on trade value in Vietnam as follows:

$$\begin{aligned}\mathrm{Log}\left(T_{ijt}\right) = {} & \mathrm{C} + \beta_1 \log\left(\mathrm{GDP}_{it}\mathrm{GDP}_{jt}\right) + \beta_2 \log\left(P_{it}P_{jt}\right) + \beta_3 \log\left(\mathrm{DIS}_{ij}\right) \\ & + \beta_4 \log\left(\mathrm{ETI}_{it}\mathrm{ETI}_{jt}\right) + \beta_5 \mathrm{FTA}_{ijt} + \beta_6 \mathrm{landlocked}_j \end{aligned} \quad (36.1)$$

In which: *C*: constant. *i*: Vietnam, *j*: trade partners of Vietnam. T_{ijt}: the value of total trade in goods between *i* and *j* in year *t*. GDP_{it} and GDP_{jt}: Gross Domestic Product of *i* and *j* in year *t*. P_{it} and P_{jt}: population of *i* and *j* in year *t*. DIS_{ij}: distance

between i and j. ETI_{it} and ETI_{jt}: Enabling Trade Index of i and j in year t. FTA_{ijt}: dummy variable for Free Trade Agreements. $FTA_{ijt} = 1$ if i and j have a common FTA in year t and $= 0$ otherwise. $Landlocked_j$: dummy variable for landlockedness. $Landlocked_j = 1$ if j is landlocked and $= 0$ otherwise.

According to economic theory, size of an economy is positively related to trade flows. An economy with the larger size is expected to trade more (Srinivasan and Canonero, 1993; Uruta & Okabe, 2007; Krugman et al., 2012). A lot of experimental studies such as Tinbergen (1962), Poyhonen (1963), Anderson and Blackhurst (1979), Baldwin (1993), Kalirajian (1999, 2000), Nguyen (2011), and Vu (2018) pointed out that size of the economy is positively correlated to trade. Therefore, β_1 and β_2 are expected to be positive.

Distance is a factor that hinders trade and makes trade more costly. Similarly, a landlocked country reduces the ability to trade. As a result, DIS_{ij} and $Landlocked_j$ variables are expected to negatively correlate with the dependent variable. This negative relationship is proved in many studies such as Tinbergen (1962), Baldwin (1993), Srinivasan and Canonero (1993), Bhattacharya and Bhattacharyay (2007), Cassing et al. (2010), and Ramassamy et al. (2017).

The recent studies by Hausman et al. (2013), Hufbauer and Schott (2013), and Duval et al. (2015) showed that trade facilitation has positive effects on trade flows. In addition, Baier and Berstrand (2007) and Carrere (2003) showed that joining FTAs promotes trade. Therefore, $ETI_{it}ETI_{jt}$ and FTA_{ijt} variables are expected to positively correlate with the dependent variable.

3.2 Data

The paper constructs panel data for Vietnam with 108 countries (Appendix 1) for the period between 2008 and 2016 when ETI data are available. Summary of variables and corresponding data sources are given in Table 36.1.

Table 36.1 Summary of variables and data sources

Variables	Explanation	Expectation	Source
T_{ijt}	Total trade in goods between i and j in year t	Dependent variable	UN Comtrade
$GDP_{it}GDP_{jt}$	Gross Domestic Product of i and j in year t	(+)	WB Development Indicators database
$P_{it}P_{jt}$	Population of i and j in year t	(+)	WB Development Indicators database
DIS_{ij}	Distance between i and j	(−)	CEPII
$ETI_{it}ETI_{jt}$	Enabling Trade Index of i and j in year t	(+)	Global Enabling Trade Reports
FTA_{ijt}	Dummy variable for Free Trade Agreements	(+)	Asia Regional Integration Center
$Landlocked_j$	Dummy variable for landlocked	(−)	CEPII

Data on trade in goods between Vietnam and partners are taken from the Commodity and Trade Database (UN COMTRADE), while data on GDP and population come from the World Bank Development Indicators Database. Distances between Vietnam and partners, whether or not landlocked, are collected from Centre for Prospective Studies and International Information (CEPII). ETI is compiled from Global Enabling Trade Reports, and information on Vietnam's FTAs with partners is taken from the Asia Regional Integration Center database.

4 Results

4.1 An Overview of Trade Facilitation in Vietnam

In general, Vietnam's trade facilitation improved moderately in the period 2008–2016. Its ETI climbed by 17 ranks from 90th in 2008 with 3.3 point to 73rd in 2016 with 4.3 point even though there were some fluctuations in the middle years of the period (Table 36.2).

In terms of score, in 2016, market access achieved the highest score of 4.5, while infrastructure had the lowest score of 3.6 (Table 36.2). Over the period 2008–2016, the strongest increase in score among four subindexes is seen for market access with an average increase of 0.25 point per year, followed by border administration (an average increase of 0.08 point) and infrastructure (an average increase of 0.06 point). On the contrary, operating environment witnessed a decrease in score over the years from 4.5 in 2008 to 4.2 in 2016.

In terms of rank, in 2016, infrastructure achieved the highest rank (66th), while border administration had the lowest rank (86th) (Table 36.2). Over the period 2008–2016, the strongest improvement in ranking is for market access, followed by infrastructure. In contrast, the ranks of border administration and operating environment decreased in this period.

Table 36.2 ETI of Vietnam in some selected years

	2008		2010		2012		2014		2016	
Criteria	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
ETI	*3.3*	*90*	*3.9*	*71*	*4.0*	*68*	*4.0*	*72*	*4.3*	*73*
Subindex A: market access	2.5	112	4.4	50	4.4	41	4.17	72	4.5	74
Subindex B: border administration	3.6	76	3.5	88	2.8	124	3.98	86	4.2	86
Subindex C: infrastructure	3.1	75	3.6	68	4.0	56	3.94	60	3.6	66
Subindex D: operating environment	4.5	62	4.3	64	4.2	69	3.96	81	4.2	77

Source: Lawrence et al. (2008, 2012), Hanouz et al. (2014), and WEF and GAFTF (2016)

Overall, in the period 2008–2016, Vietnam has achieved substantial progress in market access, which had the highest score and strongest improvement in both score and rank. This improvement is mainly attributed to Vietnam's accession to the WTO and proactive participation in Free Trade Agreements, by which Vietnam has substantially opened domestic market and at the same time can get favorable conditions for accessing markets of partner countries. Particularly, Vietnam's share of goods imported free of duty increased by 2.7% and tariff applied rates decreased by 0.9% per year on average. Vietnam also reduced complexity of tariffs by 0.07 point, and tariff Vietnam faced decreased by 0.3% per year on average.[1]

In contrast, Vietnam performed worst in operating environment, whose ranks and scores reduced substantially over the period. For this subindex, according to Lawrence et al. (2008, 2009, 2010, 2012), Hanouz et al. (2014), and WEF and GAFTF (2016), Vietnam's efficiency and accountability of public institutions, enterprises' access to finance and physical security tended to be improved by 0.15, 0.1, and 0.1 point per year on average, respectively. However, property right and openness to participation of foreign investors were worsened by 0.02 point and 0.03 point per year on average, respectively. Besides, ranks of property right and physical security reduced substantially in the given period, and rank of openness to foreign participation was very low at 102nd in the world. It implies that Vietnam should focus on promoting property right and openness to foreign participation in the coming years to improve operating business environment subindex.

Both scores and ranks of infrastructure fluctuated over the period 2008–2016. In 2008–2012, scores and ranks of this subindex increased but then decreased in the final years of the period. Contributing to the increase in scores and ranks of infrastructure is improvement in both scores and ranks of transport structure, and availability and use of information and communication technology. In contrast, transport services such as ease and affordability of shipment, competence of the logistic industry, ability and ease of tracking, and timeliness of shipments in reaching destinations were assessed to be worsening in ranks in the given period.

There are some points worthy commenting on border administration subindex. In fact, score of this subindex increased dramatically from 3.6 in 2008 to 4.2 in 2016 because Vietnam has been successful at decreasing substantially time and costs for imports and exports and improving custom services. However, rank of border administration subindex was at the lowest among four subindexes and reduced in the world ranking from 76th in 2008 to 86th in 2016 because ranks of irregular payment in exports and imports, costs and time for imports and exports, and efficiency and effectiveness of clearance were worsening. Especially, the situation of irregular payments in exports and imports in Vietnam was prevalent and assessed to be ranked at more than 100th in the world in whole period 2008–2016 (Lawrence et al., 2008, 2009, 2010, 2012; Hanouz et al., 2014; WEF and GAFTF, 2016). It pointed out that even though Vietnam has tried to make great efforts in managing at the borders, but these efforts are not adequate and still lag far behind the rest of the world.

[1] Calculations by authors from the Global Enabling Trade Index Reports from 2008 to 2016.

4.2 Case study on Border Administration in Vietnam

As analyzed above, despite Vietnam has made substantial efforts to increase scores of border administration in the recent years, there are still a lot of limitations that require the country to improve to keep up with the world. Therefore, this part focuses on analyzing the case study of border administration in Vietnam to draw out implications for the country to facilitate more efficiently trade activities.

The efforts of Vietnam in improving border administration mainly fall into three activities: (1) simplifying administrative procedures, (2) enhancing transparency, and (3) applying information technology (IT) in custom administration.

4.2.1 Simplification of Border Administrative Procedures

In 2014, the Vietnam National Assembly passed a revised Customs Law, which came to effect on January 1, 2015, and aimed at improving and simplifying custom administrative procedures to reduce costs for enterprises.

Simplification of procedures has been put a high priority and undertaken through VNACCS/VCIS (Vietnam Automated Cargo and Port Consolidated System/Vietnam Customs Intelligence Information System), which is an automated customs clearance and risk management system. The application of VNACCS/VCIS officially started from April 2015 and includes software on e-Declaration, e-Manifest, e-Invoice, e-Payment, e-C/O (Certificate of Origin), e-P/L (Packing List), Selectivity, and goods clearance. VNACCS/VCIS also creates a mechanism to facilitate National Single Window (NSW) through connecting and sharing information among Vietnam Customs, ministries, and other agencies such as banks, tax organizations, and logistics enterprises (Cao, 2013). Vietnam has actively implemented VNACC/VCIS and been assessed to achieve notable results in reducing clearance time and documents for exports and imports and establishing National and ASEAN Single Window (ASW) (Nguyen et al., 2015).

Vietnam is among the first WTO members to approve TFA and has proactively conducted a plenty of measures to implement this agreement. In 2016, the Prime Minister issued Decision No. 1969/QD-TTg on approving the "Plan of preparation and implementation of the TFA." Under this Decision, Vietnam has established National Trade Facilitation Committee (NTFC), conducted programs to disseminate information about the TFA, classified categories A, B, and C[2] provisions, prepared plans for implementation of categories A, B, and C provisions, sought technical support for implementation of categories B and C provisions, and reviewed and revised relevant legal framework for TFA implementation (Hong, 2018). The Law

[2]Category A notifications contain provisions that will be implemented immediately after the entry into force of the TFA. Category B notifications contain provisions that will be implemented two to 3 years after the entry into force of the TFA. Category C notifications contain provisions that will be implemented more than 3 years after the entry into force of the TFA and require the acquisition of implementation capacity through the provision and assistance of capacity building.

on Export and Import Taxes No. 107/2016/QH13 was also promulgated, creating a legal foundation for further international economic integration and trade facilitation of Vietnam.

The above efforts have brought about notable results, changing radically the management method of Vietnam's Customs from manual work to IT application. Time for goods clearance reduced from 21 days for both imports and exports in 2015 to 14 days for exports and 13 days for exports in 2016. The electronic tax declaration system has been implemented in 63/63 provinces, making tax declaration available online for more than 99% of operating enterprises. NSW has connected among 9/14 ministries (Vietnam Government Office, 2016). In 2016, 84 administrative procedures were abolished and 128 administrative procedures were changed, enabling simplification of customs dossiers and documents. Registering custom declaration took only 3 s and clearing goods in green channel took only 4 s (Vietnam Business Forum, 2016). As of December 2017, 11 ministries and sectors implemented 47 procedures of NSW mechanism, an increase of eight procedures compared with 2016. Also, in 2017, over 554,500 dossiers were handled, equivalent to an increase of 272% compared with 2016. As a result, businesses saved more than USD 205 million on customs clearance procedures, over 15 million hours of storage for export and 33 million hours of storage for import (Vietnam News, 2018). By the end of 2018, 14 ministries and sectors joined NSW and 99.65% enterprises participated in VNACCS/VCIS to declare imported and exported goods. Green channel goods can be processed and cleared within 1–3 s and yellow channel goods not more than two working hours (Vietnam News, 2019; VNNSW, 2019).

Even though customs administrative procedures in Vietnam are more simplified, they are still complained to be complicated. Burdensome import procedures are always listed in top two most problematic factors for importing into Vietnam (Lawrence et al., 2008, 2009, 2010, 2012; Hanouz et al., 2014; WEF and GAFTF, 2016). According to the results of survey conducted by Vietnam Chamber of Commerce and Industry in 2017, 25% of 1000 business respondents said that it was very difficult to carry out specialized inspection procedures, 39% shared the view that there were too many regulations on specialized inspection, and 98% perceived that many regulations and policies were overlapped and not relevant to business reality (Vietnam News, 2018).

4.2.2 Transparency of Border Administration

Under Law No. 80/2015/QH13 dated June 22, 2015, regarding the promulgation of normative documents, draft of legislative documents must be published in the different governmental information portals to seek opinions from relevant agencies, organizations, and individuals. Then, the authorized agencies must post the explanatory reports and the revised draft documents in response.[3] In addition, legal

[3] Law No. 80/2015/QH13, Article 55.

normative documents promulgated by central regulatory agencies, the People's Councils and the People's Committees must be posted in full on the national legal database within 15 days from the day on which they are announced or signed and published on media.[4] Law No. 80/2015/QH2013 in fact laid out the foundation for improvement of transparency in customs-related documents in Vietnam.

In 2017, with the support of the World Bank, the Vietnam Trade Information Portal was launched with the objectives to generate more trade and investment and make it easier and less costly for the private sector to trade goods and services. The trade portal is a Web-based database system which provides information related to laws, prohibitions, restrictions, technical standards, the entire commodity classification and tariffs, all procedures for license and permit application and clearance, and copies of all forms. The trade portal also covers 760 legislative documents, 301 measures, 365 procedures, and 337 forms (World Bank, 2017b). With the launch of this portal, Vietnam makes progress in bringing trade-related information accessible to the private sector and at the same time moves toward to fully comply with the TFA.

With the active implementation of NSW, in 2018, 11 ministries contributed to make customs administration more transparent by bringing 150 procedures to NSW, equivalent to an increase of more than 219% in comparison with that of 2017. VNACCS/VCIS has been adopted in all Customs Departments in Vietnam with the participation of 99.99% of enterprises, processing 99.99% of custom declaration forms that cover 99.99% of import and export turnovers (Giai, 2018). In 2018, over 1.8 million dossiers were transparently processed in NSW, equivalent to an increase of more than 224% compared to that of the previous year. Among ministries that joined NSW, Ministry of Transport had the highest number of procedures brought to NSW, which was 65 procedures, and was also the first ministry to accomplish bringing 100% of procedures to NSW from December 1, 2018 (VNNSW, 2019). More importantly, Vietnam was among 4 first ASEAN members[5] to join ASW and has transited into live operation of the ASW for the electronic exchange of C/O to facilitate customs processes among ASEAN countries (Vietnam News, 2019). Application and issue of C/O are also more transparent in Vietnam under the regulations of Decree No. 59/2018/ND-CP. Another effort of Vietnam to improve transparency at the border is implementation of electronic collection of tax rather by cash from April 1, 2019. All of these efforts enable enterprises and the community to have easy access to customs information, creating a more equal and transparent business environment in Vietnam.

Besides the abovementioned improvements in transparency at border administration, there are still some areas that need to be improved. In fact, corruption at the border is one of the most problematic factors for importing into Vietnam (Lawrence et al., 2008, 2009, 2010, 2012; Hanouz et al., 2014; WEF and GAFTF, 2016). Also assessed by Schwab (2015, 2016, 2017), corruption ranks fifth, seventh, and third in the most problematic factors for doing business in Vietnam in 2014, 2015, and 2016,

[4] Law No. 80/2015/QH13, Article 150.

[5] Vietnam together with Singapore, Indonesia, and Malaysia are first four nations joining ASEAN Single Window

respectively. In fact, corruption in Vietnam has a close relationship with intransparency when information tends to be hidden and close to the community. Furthermore, even though the authorized agencies after receiving opinions or questions from the community on draft legislative documents or procedures produce response documents, it is assessed that many of them are unclear and strictly quote again articles in Laws or Decrees, leading to different interpretations of response documents and confusion for businesses on what they should do. In many cases when businesses ask for more information or explanation from authorized agencies on why and how they apply a certain measure to businesses, e.g., price determination for imposing tariff, the authorized agencies refuse to do so based on information protection justification (Nguyen, 2016). Therefore, anticorruption and accountability improvement must be more vigorously implemented in the coming time to create more favorable conditions for improving transparency in Vietnam.

4.2.3 Use of Modern Technology on Border Administration.

In context of the fourth Industrial Revolution, Vietnam's Customs has made substantial efforts to apply IT in customs administration with a focus on provision of online public services, implementation of automated customs management system at seaports, expansion of electronic tax collection, and upgrading of IT infrastructure.

Since 2015, all basic customs procedures have been automated in 100% of Customs Departments, by which customs declaration, information receiving and processing, and clearance decision making are all implemented electronically and automatically through VNACCS/VCIS. Since March 1, 2017, Vietnam officially operates an online public service system on Vietnam Customs Portal with 46 custom administrative procedures in all Customs Departments and deploys the Customs Declaration Information Portal to provide information on e-customs declaration for businesses (Phuong, 2017). In 2018, as mentioned above, 11 ministries were connected and brought 150 procedures to NSW with over 1.8 million dossiers processed electronically. The implementation of e-customs services has brought about tangible benefits to the businesses such as customs procedures can be performed anytime and anywhere at shorter time, reducing costs for businesses. It also helps Vietnam to move toward a paperless customs system and improve transparency at the border.

Another notable effort of Vietnam in applying IT to customs activities is to implement Vietnam Automated System for Seaport Customs Management (VASSCM) that has electronically connected Customs Departments with logistics enterprises at seaports. Through VASSCM, Customs Departments are also automatically connected with NSW to exploit efficiently e-Manifest database system,[6]

[6]The system was designed and installed by Viettel Technologies and the General Department of Customs in conjunction with shipping companies. The objective of adopting E-Manifest System is to speed up customs procedures by allowing shipping agents to submit their cargo manifests and vessel information to customs officials for validation and approval via the Internet, making it convenient for both authorities and port users.

VNACCS/VCIS, and E-Customs V5. VASSCM was piloted in Hai Phong's Customs Department from August 2017 and then has been expanded to other three Customs Departments including Ha Noi, Ho Chi Minh City, and Ba Ria - Vung Tau at the beginning of 2018. By the end of 2018, VASSCM has been operated with the connection of 27/35 Customs Departments and 309 logistics enterprises. The system has processed 16.5 million containers, 58,000 sea Bills of Lading, and 39.8 million air Bills of Lading. The adoption of this modern system has changed radically management mechanism at seaports, reducing clearance time, reforming customs procedures, and improving transparency at the borders (Vietnam Customs, 2019).

In addition, Vietnam's Customs has gradually applied IT in tax collection based on the information exchange between customs offices and the commercial banks. By June 2015, customs offices connected with 28 commercial banks to collect electronically import and export tariffs 24/7 (24 h/7 days), which accounted for around 90% of the total custom tax revenues (Vietnam Government Office, 2016). In 2018, nearly 93% of enterprises made tax payment electronically with the total revenues of VND 314,792 billion. The tax payment by cash only accounted for around 0.5% of total custom tax revenue in this year. From April 1, 2019, import and export tariff payment by cash is abandoned in Vietnam. Electronic tax collection has helped businesses to save trade costs by paying tax more quickly and flexibly in different locations, time, and means of payment.

Furthermore, Vietnam's General Department of Customs has tried to upgrade IT infrastructure such as improving E-Manifest system, E-customs V5, and VASSCM, and strengthening the capacity to connect more efficiently to ASW. Especially, Vietnam is officially exchanging C/O information with Indonesia, Malaysia, Singapore, and Thailand and piloting to exchange C/O information with Brunei, Cambodia, and Philippines. By the end of 2018, Vietnam has sent 85,831 C/O to Indonesia, Malaysia, Singapore, and Thailand and at the same time received 50,435 C/O from these four countries. In the coming time, Vietnam will upgrade IT infrastructure to pilot exchange information of ASEAN declaration form, Certificate of Phytosanitary (EPhyto), and Animal Health Certificate (E-AH) within ASEAN nations (Giai, 2018).

Even though Vietnam Customs has gradually established an IT infrastructure to support customs administration, there are still some shortcomings. There are technical problems related to electronic tax payment, for example problems related to electronic signature, information protection, and failures to provide 24/7 tax payment services by some banks. Most of the electronic customs services must be operated by using computers, limiting enterprises in using these services at anytime and anywhere. The IT infrastructure of many Customs Departments is not adequate to operate electronic public customs services, especially those in remote and mountainous areas. Regarding VASSCM performance, this system so far has not covered all Customs Departments yet. Many logistics companies and trading enterprises declare imprecise information to VASSCM because they have not understood clearly regulations and procedures of information declaration through this system.

4.3 Impact of Trade Facilitation on Vietnam's Trade

4.3.1 Statistical Descriptions of Variables

The statistical descriptions of variables are shown in Table 36.3.

The average trade between Vietnam and the partner countries is USD 1.62 billion/year. There is a slight disparity between average GDP of Vietnam and the partners. In 2008–2016, the average GDP of Vietnam is USD 147.53 billion compared to USD 528.61 billion of the partners. Meanwhile, as Vietnam trades with a wide range of countries in all regions, there is a big difference in distance between Vietnam and its partners, by which the longest distance is 18,993.92 km and the shortest is 990.70 km. In 2008–2016, Vietnam reached the lowest level of ETI of 3.42 in 2008 and the highest of 4.26 in 2016, while the lowest ETI level of Vietnam's partners was 2.79 and the highest was 6.14.

4.3.2 Estimation Results

The correlation between the independent variables is checked to detect the multicollinearity problem. In general, independent variables are low correlated with correlation coefficients ranging from 0.14 to 0.62 (Appendix 2).

For the estimation of the data panel model, three models can be used, namely pooled model (PM), fixed-effects model (FEM), and random-effects model (REM). FEM removes the effect of time-invariant variables such as landlocked and distance that are important for analysis of this paper. Therefore, the paper makes a choice between PM and REM, and results of Breusch–Pagan Lagrange multiplier test show that REM is suitable (Appendix 3). After conducting diagnostic test to check the assumptions of REM, the result of Breusch–Pagan–Godfrey test shows that three is heteroscedasticity (Appendix 4). Therefore, eq. (1) was estimated using REM model with robust standard errors, and estimation results after resolving the defect are presented in Table 36.4.

The estimation results show that all coefficients have expected sights and the model explains well the changes in Vietnam's trade; 66% of changes in trade flows in Vietnam are explained by variables in the model.

The estimated coefficients of $GDP_{it}GDP_{jt}$ and $P_{it}P_{jt}$ that present economic sizes of Vietnam and its partners are positive and statistically significant. It indicates that an increase of GDP of Vietnam and its partners by 1% will result in an increase of Vietnam's trade value by 0.71%. In addition, if population of Vietnam and its partners increase by 1%, Vietnam's trade value will increase less than proportionately by 0.16%.

Distance (D_{ij}) and landlockedness ($Landlocked_j$) negatively affect Vietnam's trade value and their estimated coefficients are equal to −0.65 and −0.21, respectively. Such estimate results imply that when the distance between Vietnam and its partners increases by 1%, Vietnam's trade falls by 0.65%, while Vietnam's trade

Table 36.3 Statistics descriptions of variables

Variables	Mean	Median	Minimum	Maximum	Std. Dev.
T_{ijt} (million USD)	1620	173.04	4.42	71,988.13	572.73
GDP_{it} (billion USD)	147.53	155.57	98.27	201.31	40.92
GDP_{jt} (billion USD)	528.61	139.34	2.02	11,232.11	1159.94
P_{it} (person)	88,697,884	88,809,200	85,118,700	92,701,100	113,466.70
P_{jt} (person)	60,632,945	14,308,740	317,414	1,378,665,000	190,779,526
DIS_{ij} (km)	8981.26	8299.98	990.70	18,993.92	4495.14
ETI_{it}	3.88	4.01	3.42	4.26	0.31
ETI_{jt}	4.31	4.27	2.79	6.14	0.71
FTA_{ijt}	0.88	1	0	1	0.32
$Landlocked_j$	0.87	1	0	1	0.33

Source: Authors' compilation from Eviews Results

Table 36.4 Estimation results

Variables	Coefficient	t-stat	*p*-value
C	4.96**	7.84	0.06
$\text{Log}(\text{GDP}_{it}\text{GDP}_{jt})$	0.71***	15.46	0.03
$\text{Log}(P_{it}P_{jt})$	0.16***	2.91	0.02
$\text{Log}(\text{DIS}_{ij})$	−0.65***	−6.24	0.04
$\text{Log}(\text{ETI}_{it}\text{ETI}_{jt})$	1.14***	4.26	0.03
FTA_{ijt}	0,16**	3.57	0.05
Landlocked_{j}	−0.21*	−1.78	0.08
R-squared	0.66	F-stat	178.36
Adjusted R-squared	0.66		

Source: Eviews results
Note: ***, **, * are statistically significant at 1%, 5%, and 10% level

with landlocked country will be 1.23% less than Vietnam's trade with unlandlocked country.

FTA_{ijt} is positively related to Vietnam's trade value and statistically significant. The estimated coefficient of 0.16 indicates that Vietnam's trade with FTA partners is 1.17% higher than with non-FTA partners.

Finally, $\text{ETI}_{it}\text{EIT}_{jt}$ is positively correlated with the independent variable and statistically significant. The estimated coefficient of 1.14 indicates that the effect of trade facilitation on Vietnam's trade is more than proportionate. An increase of ETI of Vietnam and its partners by 1% will result in 1.14% increase in Vietnam's trade, implying that trade facilitation largely affects trade of Vietnam.

5 Conclusions and Implications

Trade facilitation is of great importance for countries in reducing trade costs, improving efficiency of border procedures, boosting trade flows, and promoting participation in the global value chain. Because Vietnam is highly dependent on trade, the country has made substantial efforts to facilitate its trade flows. As a result, in the period 2008–2016, Vietnam's ETI scores increased from 3.3 to 4.3 and its ETI ranks climbed from 90th to 73rd. Among four pillars or subindexes of ETI, Vietnam has achieved the biggest progress in market access, which had the highest score and strongest improvement in both score and rank. Following market access is infrastructure, whose scores and ranks experienced an upward trend in 2008–2016. Concerning border administration, the results were mixed when Vietnam achieved a progress in scores but a decline in rank, indicating that Vietnam has still lagged far behind the rest of the world in this pillar. Vietnam performed worst in operating environment, whose both ranks and scores reduced substantially over the period.

The paper also examined a case study of border administration in Vietnam. The results show that Vietnam's efforts to facilitate trade through border management have focused on simplifying administrative procedures, enhancing transparency, and

applying IT in custom administration. However, burdensome trade procedures, overlapping customs policies and regulations, corruption at the border, low accountability of authorized agencies, and inadequate IT infrastructure are key obstacles to Vietnam's trade flows.

By using the gravity model, the paper shows that trade facilitation plays a key role in promoting Vietnam's trade. While the effects of GDP and population of Vietnam and its partners on Vietnam's trade are less than proportionate, the effect of trade facilitation on Vietnam's trade is more than unity. An increase by 1% of Vietnam and its partners' ETI will result in an increase of 1.14% in Vietnam's trade value. Therefore, it is crucial for Vietnam to actively strengthen trade facilitation to take full advantage of this activity in promoting trade.

Based on the analysis of the current situation of trade facilitation and its impact on Vietnam's trade, the paper highlights some following policy implications to support Vietnam to strengthen trade facilitation in the coming time.

Firstly, Vietnam should give priority to improve operating environment, the pillar that Vietnam has performed worst by focusing on promoting property right and openness to foreign participation. In addition, Vietnam should continue to make trade-related laws and regulations simpler, more transparent, and more stable to facilitate import and export activities.

Secondly, border administration should be enhanced through the following measures: (1) reduce burden of import procedures for enterprises, especially specialized inspection process and move more vigorously toward a paperless system; (2) review and revise the existing customs policies and regulations to reduce the overlapping; (3) promote anticorruption measures and improve accountability of authorized customs-related agencies to increase transparency at the borders; (4) enhance investment and application of IT in border administration aiming at reducing trade time and cost and also raising simplification and transparency at the borders. In context of the fourth Industrial Revolution, Vietnam's Customs should promote research and application of Internet of Things (IoT), Artificial Intelligence (AI), and Blockchain to raise efficiency of border management.

Thirdly, Vietnam should invest more in infrastructure with a focus on transport infrastructure in order to improve transport services quality such as ease and affordability of shipment, competence of the logistic industry, ability and ease of tracking, and timeliness of shipments in reaching destinations. It is because all of these factors of Vietnam are assessed to be worsened in ranks. It is also important for Vietnam to pay more attention to public–private partnership (PPP) form of investment to make up for the state budget shortage and at the same time improve infrastructure operation efficiency.

Finally, Vietnam should actively promote international cooperation in trade facilitation. It can be done through strengthening NSW and ASW in the framework of ASEAN cooperation. Even though Vietnam is among the first nations to join ASW, the paperless system of border administration in Vietnam is at early stage of development and not fully integrated with other ASEAN members. Therefore, Vietnam and other ASEAN nations must work together to develop the legal and

technical regulations needed for the seamless electronic exchange of regulatory and trade data and documents through ASW. Vietnam should also consider accelerating its efforts toward digital trade facilitation in context of the fourth Industrial Revolution. Furthermore, Vietnam should take advantage of trade facilitation clauses in new-generation FTAs to which Vietnam is a member such as Comprehensive and Progressive Trans-Pacific Partnership Agreement (CPTPP) and the European–Vietnam Free Trade Agreement (EVFTA). Looking for support for capacity building in trade facilitation from international organizations that have implemented a wide range of trade facilitation programs such as United Nations, APEC, and the WTO is also an important solution that Vietnam should consider to promote trade facilitation in the coming time.

Appendix 1: List of Countries in the Gravity Model

Algeria	Chile	Greece	Liberia	Norway	South Africa
Argentina	China	Guatemala	Lithuania	Oman	Spain
Armenia	Colombia	Honduras	Luxembourg	Pakistan	Sri Lanka
Australia	Costa Rica	Hungary	Madagascar	Panama	Sweden
Austria	Croatia	India	Malaysia	Paraguay	Switzerland
Azerbaijan	Cyprus	Indonesia	Mali	Peru	Thailand
Bahrain	Denmark	Ireland	Malta	Philippines	Trinidad and Tobago
Bangladesh	Ecuador	Israel	Mauritania	Poland	Tunisia
Belgium	Egypt	Italy	Mauritius	Portugal	Turkey
Benin	El Salvador	Jamaica	Mexico	Qatar	Uganda
Botswana	Estonia	Japan	Mongolia	Romania	Ukraine
Brazil	Ethiopia	Jordan	Morocco	Russian Federation	United Arab Emirates
Brunei Darussalam	Finland	Kazakhstan	Mozambique	Rwanda	United Kingdom
Bulgaria	France	Kenya	Namibia	Saudi Arabia	Uruguay
Burundi	Gabon	Kuwait	Nepal	Senegal	Venezuela
Cambodia	Georgia	Latvia	Netherlands	Sierra Leone	Yemen
Cameroon	Germany	Lebanon	New Zealand	Singapore	Zambia
Canada	Ghana	Lesotho	Nigeria	Slovenia	Zimbabwe

Appendix 2: Correlation Between Independent Variables

	Log ($GDP_{it}GDP_{jt}$)	Log ($P_{it}P_{jt}$)	Log (DIS_{ij})	Log ($ETI_{it}ETI_{jt}$)	FTA_{ijt}	$Landlocked_j$
Log ($GDP_{it}GDP_{jt}$)	1.00					
Log($P_{it}P_{jt}$)	0.62	1.00				
Log(DIS_{ij})	−0.14	−0.23	1.00			
Log ($ETI_{it}ETI_{jt}$)	0.40	−0.27	−0.02	1.00		
FTA_{ijt}	0.27	0.30	−0.60	0.12	1.00	
$Landlocked_j$	−0.23	−0.15	0.04	−0.04	−0.14	1.00

Source: Eviews results

Appendix 3: Breusch–Pagan Lagrange Multiplier Test

Null hypothesis: There is no significant difference across units

Model	Chi-sq. statistic	Prob.
Random-effects model	1980.56	0.0000

Source: Eviews results

Appendix 4: Breusch–Pagan–Godfrey Test

Heteroskedasticity test: Breusch–Pagan–Godfrey				
F-statistic	6.79	Prob. F(6.547)	0.00	
Obs*R-squared	38.42	Prob. Chi-square(6)	0.00	
Scaled explained SS	37.71	Prob. Chi-square(6)	0.00	
Variable	*Coefficient*	*Std. error*	*t-stat.*	*Prob.*
C	0.77	0.33	2.36	0.02
Log($GDP_{it}GDP_{jt}$)	−0.03	0.02	−1.55	0.12
Log($P_{it}P_{jt}$)	−0.03	0.02	−1.18	0.24
Log(DIS_{ij})	0.01	0.03	0.43	0.66
Log($ETI_{it}ETI_{jt}$)	−0.29	0.15	−1.87	0.06
FTA_{ijt}	0.11	0.03	3.50	0.00
$Landlocked_j$	0.01	0.02	0.43	0.67
R-squared	0.07	Mean dependent var	0.13	
Adjusted R-squared	0.06	S.D. dependent var	0.18	
S.E. of regression	0.18	Akaike info criterion	−0.63	
Sum squared resid	16.84	Schwarz criterion	−0.58	

(continued)

Heteroskedasticity test: Breusch–Pagan–Godfrey			
Log likelihood	181.57	Hannan–Quinn criter.	−0.61
F-statistic	6.79	Durbin–Watson stat	2.13
Prob(F-statistic)	0.00		

Source: Eviews Results

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Chapter 37
Value Chain Financing Approach: A Good Way to Sustainable Agricultural Growth in Vietnam

Bui Thi Lam, Tran Huu Cuong, Ho Thi Minh Hop, Nguyen The Kien, and Philippe Lebailly

Abstract Nowadays, there is an increasing interest in the value chain financing approach (AVCF) as a crucial tool toward sustainable agricultural development. The paper aims to mainly describe the performance of the internal and external financing mechanisms existing in the Seng Cu rice value chain in Lao Cai and focus on the impact of the contract farming on rice production based on cost and benefit analysis of 160 representative producers, classified into three groups: small, medium, and large scales. Besides this, in-depth interviews with 45 other stakeholders involved in the chain were also conducted to obtain the insightful qualitative analysis. The study points out that the combination of internal and external finance in the chain creates a financial ecosystem, in which each type of player likely meets their tailored demands and becomes paramount to their success. However, in practice, the participation of agricultural banks in the chain still limit and financial shortage seems popular for many chain actors, which hinder their effeciency. Contract farming established among the enterprises and local producers helps SC rice producers to optimize inputs used and gain higher value-added as well as manage the quality of the product flows the chain. Finally, the recommendations for policymakers, producers, and agribusiness are suggested to enhance the effectiveness of these financing sources and to sustainably develop the Seng Cu rice chain in the locality as well as the agriculture sector nationwide.

B. T. Lam (✉)
University of Liège, Gembloux, Belgium

Vietnam National University of Agriculture, Hanoi, Vietnam

T. H. Cuong
Vietnam National University of Agriculture, Hanoi, Vietnam

H. T. M. Hop · P. Lebailly
University of Liège, Gembloux, Belgium

N. T. Kien
VNU University of Economics and Business, Vietnam National University, Hanoi, Vietnam

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Keywords Agricultural value chain finance · Small producer · Rural finance · Sustainability · Vietnam

1 Introduction

In developing countries, like Vietnam, agricultural sector always plays a pivotal role in food security, poverty reduction, and improvement of income and living standards as well as effective risk-coping strategies for farmers (FAO, 2017, 2018; IFC, 2014; Khandker & Koolwal, 2016; Nguyen, 2010; OI, 2013). Although its multifaceted importance in the economies is well-documented, agriculture still is considered as an unattractive field for investment due to the prejudices about high risk and low profitable ratio. Therefore, agricultural investment still remains a large bottleneck to promote agriculture development and achieve other Millennium Development Goals (MDGs) that Vietnam has been striving to fully achieve. In fact, Vietnamese farmers have been facing various endogenous and exogenous obstacles to access formal credit, which restrict agricultural productivity and other economic opportunities (HLPE, 2013). Left with no option, farmers take a loan from informal sources at much higher interest rate to finance their production investment and other urgent cases, and hence are continuously stuck in their miserable lives.

In recent years, the studies on Agricultural Value Chain Financing (hereinafter: AVCF) have become strangely attractive because of their effectiveness in many fields: economic, social, and environmental as a whole. In short, AVCF encompasses the flow of products, finance, agricultural knowledge, and market information from production to consumption phase. In essence, value chains differ remarkably across regions and products; therefore, large-scale and "one-size-fits-all" subsidy programs funded by central governments are not appropriate and costly. It should be clearly identified what are the tailored demands of each chain participator and how to distribute the benefit existing in the chain. Under the AVCF approach, small farmers likely gain a greater share of their value and assume fewer risks (Miyata et al., 2009; Olomola, 2010; Saigenji & Zeller, 2009) and the chain is developed toward sustainability.

In this study, Seng Cu rice value chain in Lao Cai is chosen to represent the research on AVCF in the mountainous areas of Viet Nam. The province is located in the Northern Midlands and Mountain (NMM), the largest ecological area, concurrently, the homeland of the majority of the poor in Vietnam (GSO, 2017). The paper aims to describe how are the AVCF mechanisms performing and their impact on agricultural production based on the cost and benefit analysis of 160 Seng Cu rice growers surveyed. To do this, the remainder of the paper is organized as follows. Section 2 provides the literature review of AVCF, and Sect. 3 explains the methods used for choosing the research site, collecting data, and then analyzing data. Next, Sect. 4 presents the results and discussion, comprising the picture of Seng Cu rice value chain and the finance existing along the chain. Besides this, the study also focuses on the impact of contract farming on different farmer subgroups classified

based on Seng Cu rice cultivation, including small, medium, and large scale. Finally, Sect. 5 concludes the main findings of the paper with some brief policy implications needed.

2 Literature Review

Until now, AVCF is likely an interesting topic for agricultural development agencies and has increasingly been applied worldwide, especially in developing nations and agriculture-based regions. This approach supports chain actors via tailoring services and products along with a specific value chain in order to reduce the financial cost and risk as well as enhance the effectiveness and competitiveness of agricultural product, each value-added stage as a whole chain (AfDB, 2013; HLPE, 2013; Miller, 2012; Miller & Jones, 2010). More broadly, AVCF also is able to tackle the environmental issues that are being considered a weak performance in reaching the triple bottom line (economic, social, and environmental) of green microfinance (Allet & Hudon, 2015).

It is clear that the agricultural sector is characterized by the heterogeneity of financial needs, especially smallholder farmers. They not only have a diversity of agricultural activities (crop; livestock) and/or economic performance (farm; nonfarm), but also the combination of production and consumption unit. With traditional credit, banks cannot provide timely and sophisticatedly enough as farmer's desire (Miller & Jones, 2010). Under the AVCF approach, smallholder farmers receive "tailor-made" financial services and productive assistance coming from outside and inside the value chain. The different actors in the chain, therefore, should be funded with different instruments and financial providers (Miller, 2012).

According to IISD (2015), agriculture evolves a hugely wide range of activities, from farming performance to the productive infrastructure system as well as research and development. In parallel with it, agriculture finance also encompasses four groups of financial demand, including (1) the needs of farmers and agribusinesses; (2) the transactions among participants along with the chain; (3) rural infrastructure investments; and (4) generating knowledge and innovation.

Concerning the source of finance existing in the particular chain, Miller (2012) classifies and defines as follows:

Internal value chain finance refers to the financial sources occurring inside the agrichain among participants. For example, suppliers provide in-kind credit to a farmer (i.e., trade credit) or wholesalers funds in advance inputs and buyback agreement (i.e., contract farming).

External value chain finance implies the funds derived from outside the agrichain, whereby banks and other financial institutions create one-to-one relationships via contractual agreements with different actors.

Similarly, the study of AfDB (2013) also analyzes deeply four key roles of AVCF approach in agricultural development and economy (Fig. 37.1). *Firstly*, it likely enhances the **competitiveness** of agricultural products and the chain. It has become

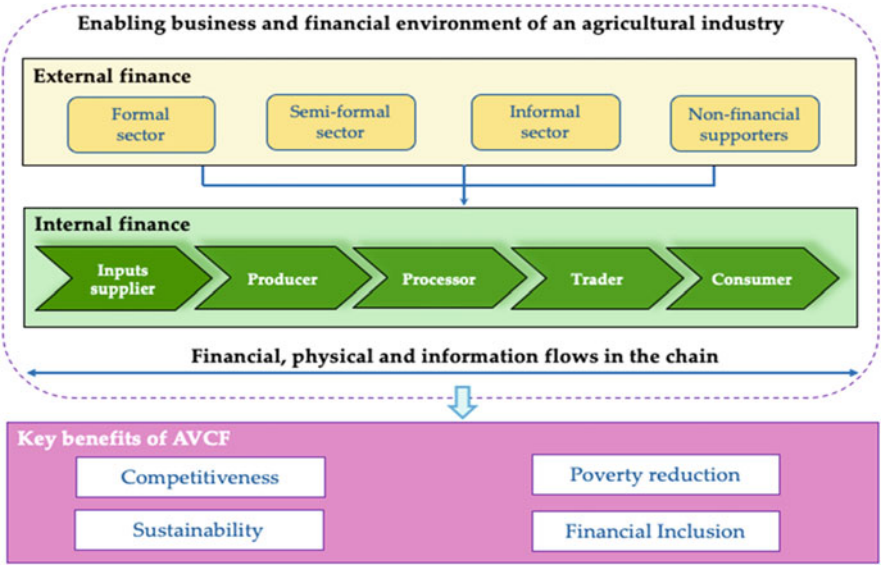

Fig. 37.1 Financial sources existing in a typical agricultural value chain and its impacts. (Source: Author's illustration adapted from Miller and Jones (2010) and AfDB (2013))

more and more important in the context of the domestic and international trade strongly driven by the consumer tastes that change increasingly rapidly. Thus, without linkage among players in the chain, the gap between products at farm gate and consumers' desire is widened, resulting in a reduction of not only the price and quantity of products sold, but also the economic benefit of all participants in the chain, and so forth.

Secondly, AVCF is able to boost agricultural development toward **sustainability** via the use of natural resources and strengthening resilience against shocks . In reality, the poor are characterized by small-scale producers with tiny investment, and their businesses were running under difficult and constraining conditions. Therefore, proper financial services to secure the best possible investment choices can help them transform their farming production from subsistence to commercialization[1] and to approach sustainable income and livelihood.

Thirdly, AVCF can escape from the vicious cycle of **poverty** through addressing its grass-root reasons, lacking access to affordability, quality, and full range of financial services. Understandably, financial shortage negatively affects not only the production stage due to low investment but also their power bargaining with marketing actors. Their income and livelihood, therefore, are undermined by both of endogenous and exogenous drawbacks.

[1]There are three levels of market orientation: subsistence, semicommercial, and commercial system. In parallel with it, there are significant differentiations in terms of farming system, farmers' objective, input management, and household's income sources.

Finally, AVCF improves **financial inclusion** in the agricultural sector. Financial inclusion is defined as the popularity and diversity of formal financial services accessed and used by citizens in society (Fungáčová & Weill, 2015). The availability of formal credit sources directly affects to the alternative banking system, such as tacit agreements of banks, unregulated pawnshops, and private moneylenders. The expansion of informal credit sources negatively impacts the financial stability and economic growth (Bruhn & Love, 2014). The growth and development of a nation is strongly dependent on the expansion of banking services to the financially excluded citizens, as they possess untapped valuable potentials that could be of tremendous benefit to the economy at large (Michael & Sharon, 2014). However, financial inclusion still is the big challenge worldwide, especially in less developed countries.

3 Methodology

3.1 Research Site

Lao Cai is chosen for researching on the montane rice sector because the province has typical social, economic, and political characteristics representing the NMM region, and it is also endowed the favorable natural condition for rice growing. More detailed, as per GRiSP (2013), rice planted in low-latitude, high solar radiation, and cool temperature tends to get higher productivity and quality. Indeed, Seng Cu Lao Cai is the unique kind of rice recognized as the special and safe product in Lao Cai province (Fig. 37.2c) and often has the highest selling price in the national market.

Regarding cereals, rice cultivating is often prioritized than maize, so most cropping land is devoted to it (Fig. 37.2b). Maize is planted on steep hills, where it is impossible to harvest rice because of water shortages. There are two main typical agroecological zones in Lao Cai, upland and lowland. In upland, rice is planted in small terraced plots on hillsides and limited water condition nearly without public irrigation. In contrary, lowland rice is cultivated in flat field*s* and harvested twice per year. Producers here also take advantage of the well-constructed irrigation system (Fig. 37.2b) and many productive infrastructures.

The study selected the four largest Seng Cu rice production-area communes in Lao Cai province. They represent for two different ecological zones (i.e., upland and rainfed versus lowland and irrigated). Figure 37.2a maps (1) two lowland communes, namely Muong Vi and Ban Xen (green 1 and 2, respectively); and (2) two upland communes called Nam Lu and Lung Khau Nhin (orange 3 and 4). Overall, the proportion of their cultivated land spent for Seng Cu rice varies significantly, especially in the uplands due to the purpose of Seng Cu cultivation. While lowlanders aim to maximize profit, uplanders prioritize food security. Therefore, upland growers prefer to plant high-yielding hybrid varieties, not Seng Cu rice.

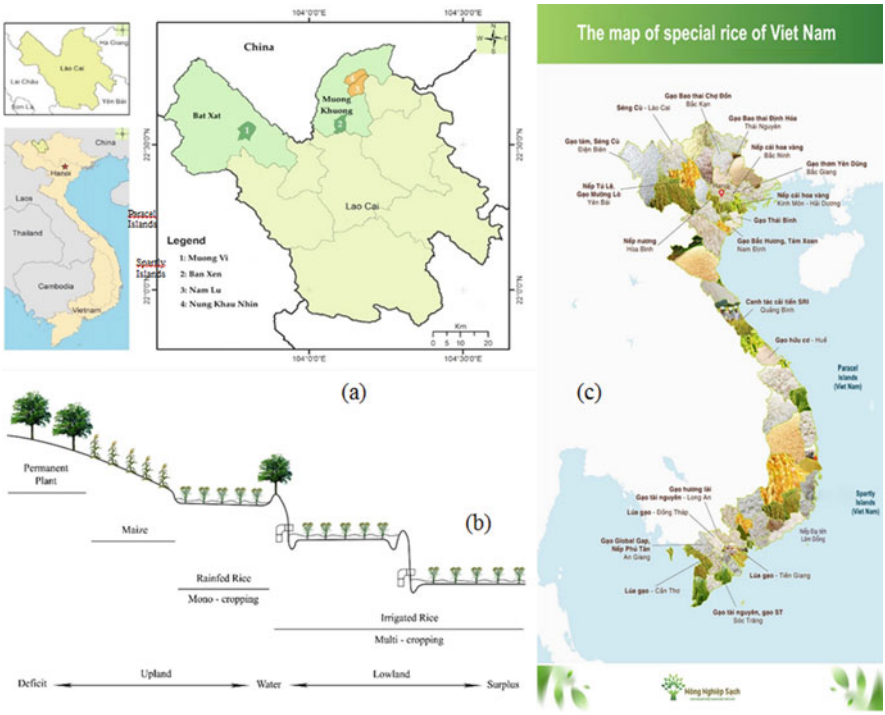

Fig. 37.2 Description of the research sites. (Source: (**a**) and (**b**) are author's own elaboration; (**c**) is cited from https://vnexpress.net/thoi-su/ban-do-cac-loai-gao-dac-san-o-viet-nam-3768497.html

3.2 Sampling Size

Both secondary and primary data were collected to conduct the qualitative and quantitative analyses. The former analysis was applied to explore the interactions and relationships existing among participants in different product channels. Furthermore, their perspectives about the policies related to agricultural supports and linkages were precisely recorded. The latter one was used to collect data from the household survey and in-depth interviews to analyze value-added to Seng Cu rice producers.

The sampling size was determined through the underlying formula, which is issued by Cochran (1977):

$$n = \frac{Z^2 \, x \, p \, x \, (1 - p)}{e^2}$$

where n is the sampling size; Z is the statistical value containing the area with the normal curve (e.g., $Z = 1.96$ for 95% level of confidence); p is the estimated proportion of a feature in the population (normally, p takes the value of 0.5); and

e is the desired level of precision (7.75%). Based on these, the sampling of 160 households is identified, including 80 upland and 80 lowland SC rice producers.

Besides this, there were 31 in-depth interviews conducted in 2017, including 9 small collectors, 10 large collectors, and 12 retailers through convenience and judgment sampling methods. The authors also interviewed annually the local authorities from 2015 to 2017 at three administrative levels to have an overview of subsidized programs for the agricultural sector, including Seng Cu rice.

3.3 Data Collection

The study collected both secondary and primary data, which are elaborately described below.

3.3.1 Secondary Data Collection

Normally, a study is started by identifying the research questions existing in the subject area through archival research, which provides the historical context to the observed data changed over time and relevant issues. These types of activities are conducted through the analyses of existing materials and published/unpublished written documentations (Angrosino, 2007). Archival research in this study, firstly, gathered various previous reports and relevant official statistics about the socioeconomic situation of Lao Cai and the NMM region. This step helps to identify the proper research sites and representative agricultural products for the study (Seng Cu rice). Moreover, this data source also supports and/or compares the primary data collected from the fieldwork in the next steps. Moreover, the second type of documents which serve literature review and discussion, etc., are also collected. It consists of articles, books, consultancy reports, technical notes, project reports, government official reports, policy documents, and so on.

3.3.2 Primary Data Collection

Primary data are the original data, served for the specific studying purposes; therefore, the researchers have to organize and conduct by themselves to collect accurate information. It exists in the diversity of types, like numeric, textual, visual, or a combination of the above (MacIntosh & O'Gorman, 2015).

Participant observation is defined as an ethnographic research approach in which the researcher's participation in the lives of the local people in order to develop ongoing relations with them and actively reflects on what is going on (Emerson et al., 1995; Fetterman, 2009). However, in this study, the research likely prioritizes the studied issues among the local ongoing background due to the limitation of time and funding. This method plays a pivotal role to what extent, in the evaluation of the

validity of data collected through the interview (Kelly, 2005). It is important to note that finance is usually a sensitive and delicate topic in any society.

In-depth interviews were frequently conducted with officials working at Lao Cai Development of Agriculture and Rural Development and clerks of the agricultural banks in the research site as well as stakeholders directly involved in the chain.

Group discussions are held for 8 to 10 household participants to identify the current local rice farming practices and the reasons why farmers did not (want to) apply advanced practices; the main difficulties and how to overcome them. Besides this, the role of SC rice in household's economic opportunities, livelihood, and culture is also sketched out.

Household survey is conducted based on the structured questionnaire and face-to-face interviews to capture (1) the specific households' characteristics; (2) SC rice farming practices and input management; (3) costs and income generated from SC rice production; and (4) the farmers' feedbacks on agricultural credit and linkages among chain actors.

3.4 Data Analysis

In order to evaluate the impacts of contract farming on Seng Cu rice production, the whole samples were divided into three subgroups based on their scale of cultivated land for Seng Cu rice and their status whether they contract with an enterprise or not. The household which belongs to 25% of the smallest Seng Cu rice area in the year surveyed is considered the small-scale group. Similarly, 50% and 25% of 160 households surveyed have larger areas and are categorized as the medium- and large-scale groups, respectively. More detailed, there are 40 households labeled small-scale farmers, who had average SC rice cultivation at 0.15 ha. And, 80 medium-scale farmers planted 3.1 ha in that year. Similarly, 40 large-scale farmers used 8.8 ha for Seng Cu rice growing, and they often harvest twice per year. Comparative analysis within subgroups always apply the *Student's t-test* to determine whether the sample means of *two* continuous parameters are significantly different from each other or not.

The study uses main indicators in the value-added analysis named Value Links 2.0 and proposed by GIZ (Springer-Heinze, 2018) as follows.

Intermediate cost **(IC)** includes the total cost of purchasing inputs (goods and services) used in the SC rice production in 1 year of 2016.

Gross output **(GO)** is the total value of main and by-products generated in SC rice production.

Value-added **(VA)** is the total worth created on agricultural production and calculated by the formula: **VA = GO – IC**.

4 Results and Discussion

4.1 An Overview About Seng Cu Rice Value Chain in Lao Cai

4.1.1 Main Characteristics of Participants in the Chain

According to M4P (2008) and Springer-Heinze (2018), identifying the chain participators and mapping the marketing channels must be firstly clarified. Figure 37.3 illustrates five main actors participating in the Seng Cu rice chain in Lao Cai. They consist of input suppliers, producers (in upland and lowland), small collectors, large collectors, and retailers. They also parallel with five key value-addition phases, including input supply, production, collection, processing, and trading. Besides producers, marketing actors (comprising the Tien Phong Cooperative (T.P.C), the Muong Khuong Cooperative (M.K.C), and large collectors) also have a pivotal role in the chain's development. Here, these actors are responsible for multiple functions in the chain: collecting, processing, trading, and delivering, which influences strongly the quality of milled rice. Furthermore, six marketing channels transport Seng cu rice from producers to final customers in the chain.

Our in-depth interviews reveal that large collectors account for the biggest share of purchased paddy output (approximately 80% for 4000 tons in 2017), in which, they collected about 60% and 50% of total amount paddy harvested in uplands and lowlands, respectively. Sadly, the study points out that these actors often deliberately mix ordinary rice into SC rice to obtain higher profits, resulting in a reduction of quality and dissatisfaction of high-end customers.

T.P.C and M.K.C are two business units exploiting the trademarks "Seng Cu Rice Lao Cai" and "Seng Cu Rice Muong Khuong" and establishing the contract farming

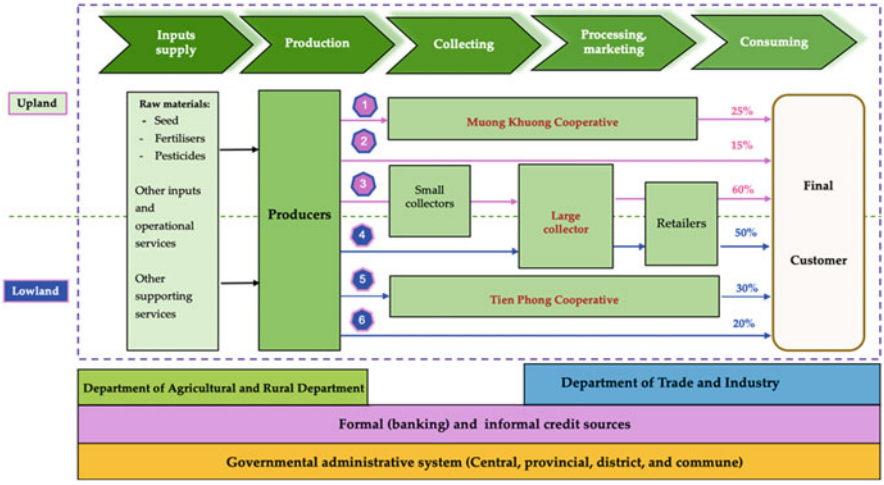

Fig. 37.3 Marketing channels of Seng Cu Rice in Lao Cai. (Source: In-depth interviews, 2016–2017)

with producers in order to better manage the quality of paddy. However, T.P.C and M.K.C just only bought about 700 tons (about 14%) and 200 tons (4%) in the same year observed. In fact, they want to scale up their performance to optimize the utility of the processing machinery system invested before. The reason explaining for their tiny volume collected was financial shortage, and they just borrowed a small size of loan from the local banks due to lack of collateral or low assessment of mortgage assets by clerks, or both. Clearly, it needs interventions from local authorities to facilitate credit access for potential agribusinesses and/or agro start-ups and, at the same time, enhance the awareness of large collectors to protect the trademark and the quality of SC rice.

4.1.2 Opportunities and Challenges in Development of Seng Cu Rice Chain in Lao Cai

The section is derived from the findings in the Seng Cu rice value chain analysis mentioned above (see more (Bui et al., 2018, 2019)) (Table 37.1).

The result of strength, weakness, opportunity, and threat (SWOT) analysis is the set of strategies for upgrading this important agricultural value chain. Briefly, there are four main plans based on SWOT analysis, comprising breakthrough strategy (S-O); adapting strategy (O-W); regulating strategy (T-S); and protection strategy (T-W). In doing so, the relevant actors are able to determine 12 specific activities in order to boost effectively the Seng Cu rice value chain and each chain participant.

4.2 Value Chain Financing Mechanisms in the Seng Cu Rice Chain

Lao Cai is characterized by the multifaceted importance of Vietnam: border province, close to China; homeland of the poor; diversity of ethnic minorities; mountainous terrain and agriculture as the major livelihood of local people. For these reasons, the Vietnamese Government always pays attention in regional development through various financing supports over past three decades. It is evident that in rural Lao Cai, there is the coexistence of formal, semiformal, and informal financial suppliers and nonreimbursable Government's subsidies. The formal sector, Viet Nam Bank for Agriculture and Rural Development (VBARD) and Viet Nam Bank for Social Policy (VBSP), consists of two state-owned banks as the powerful tools of the Government in agricultural development and poverty reduction. The plenty of loanable funds help these two banks to make up a predominant market share in terms of amount of clients and outstanding loan. Yet, the upper hand of these banks in rural financial market as quasi-monopoly has still been controversial, and has drawn various criticisms from researchers (Bui et al., 2019; Dufhues, 2007; Sauli et al., 2017). Under this financial market in rural areas, formal credit access is considered

Table 37.1 SWOT analysis of production phase in the Seng Cu rice in Lao Cai

SWOT	*Strength (S)* **S1:** Strong trademark of SC rice **S2:** Many producers have relatively good experiences in rice production **S4:** High quality leads to high selling price and economic benefit for chain actor, especially producers **S5**: Established the link between fertilizer companies and producers **S6**: Set up the linkage between producers and the marketing actors (T.P.C, M.K.C)	*Weakness (W)* **W1**: Most of the producers have low education, low bargaining power, and then receive lower price **W2**: Improper farming practices **W3**: Financial shortage and many obstacles to access preferential credit W4: Outdated technology in processing and storing **W5**: Quality decline due to the deliberately mix ordinary rice into SC rice to maximize profit **W6**: Established linkages are still weak
Opportunities (O) **O1**: Suitable natural condition **O2**: Large potential for expanding the growing area **O3**: SC rice is highly paid attention by local authorities **O4**: Supporting policies on special agricultural products for both producers and agribusiness **O5:** The increasing demand of high-end customers on SC rice **O6:** Vietnam has signed and/or jointed vast regional and international trade agreements	*Breakthrough strategy:* (1) Strengthen the farmer—enterprise linkages (i.e., production and consumption) (2) Enhance the production capability through the common interest groups (i.e., vertical links) (3) Take advantage the supportive funds along the chain (4) Exploit niche potential markets through exporting	*Adapting strategy:* (6) Enhance the effectiveness of extension and share the knowledge among CIGs' members 7) Provide training for group leaders of collective groups about market knowledge, value chain, and management skill for responsibilities (8) Focus on postharvesting technology and innovation to optimally exploit the value of SC rice. (9) Facilitate credit access to both farmers and agribusiness
Threats (T) **T1:** Difficulty in production because insects are attracted by its perfume, causing vast diseases **T2:** Poor infrastructure and important public services (irrigation, credit, extension) **T3:** Lack of appropriate machines in terraced fields **T4:** Easily affected by climate change and nature-related risks **T5:** Weak governance of local authorities **T6:** High competitiveness	*Regulating strategy:* (4) Deploy supporting packages of the province, projects and programs of concerned departments and sectors relevant to collective groups/cooperatives and companies (5) Call for investors participating in drying, rice husking, and processing in province/districts and have big rice planting region	*Protection strategy:* (10) Increase the effectiveness of agricultural extension and technology application to help producers achieve sustainable farming practices based on the principle "Gain more for less" suggested by World Bank (2016) (11) Suggest suitable solutions against nature-related risks, better performance when crop disease outbreak occurs (12) Enhance trade promotion activities and advertise clean

(continued)

Table 37.1 (continued)

from other high-quality rice **T7:** High requirements of SC rice in processing and storing		products in business link (12) Increase the coordination among relevant departments and chain sectors as the PPP model

Source: authors

Table 37.2 The main financing sources and its popularity in the value chain of Seng Cu rice in Lao Cai

Sources / Participants	External financing sources				Internal sources	
	VBARD	VBSP	Gov. subsidies	Informal loan	Trade credit	Contract farming
Input suppliers	4	-	-	2	3	-
Upland producers	1	3	2	3	3	1
Lowland producers	3	2	1	1	2	3
Small collectors	2	1	1	2	-	-
Larger collectors	4	-	-	2	2	3
T.P cooperative	3	-	1	3	2	4
Retailers	4	-	-	1	1	1

Source: authors' illustration, adapted by Roman (2008)

Note: Level of access to financial sources (from sufficient to poor) 5 4 3 2 1

Source: authors' illustration, adapted by Roman (2008)

one of the most obstacles of farmers (Bui et al., 2019; GSO, 2016) and agro enterprises (Sauli et al., 2017). Table 37.2 illustrates the actual access and usage of financial sources of all participants in Seng Cu rice value chain based on our field trip study in Lao Cai province.

The case study in Lao Cai shows that many producers and most agro enterprises in the locality have still been limited to access to formal credit, restricting investment in the agriculture sector and other economic opportunities. The household survey revealed that 38.8% and 33.1% of total respondents accessed agricultural credits at the VBARD and VBSP, respectively. In fact, most upland producers face the financing shortage, leading to lower investment in Seng Cu rice production as recommended by the local extension. Unfortunately, they could not access banking credits due to complicated procedures and collaterals required as well as high transaction costs. Furthermore, the absence of credit officers in the field trip leads to inaccurately assess the production capability of borrowers, and disburse in long time.

Without access to the formal sector, smallholder farmers often fund their agricultural investment through two informal financing providers. The first is provided by moneylenders at higher interest rates to meet urgent financial needs in SC rice production (fertilizers, pesticides). There are several empirical evidences provoking that informal credit with heavy interest rate (i.e., usury) exacerbates the poverty

density in rural areas in developing countries. The second source derives from financial arrangements among SC rice growers and stakeholders in the chain. In principle, the chain players that have stronger financial power tend to provide credit to lower partners, thereby facilitating the business and production cycle operate effectively and increase the income for all participators as a whole. In this study, there are two underlying linkages offering internal financing for SC rice growers, which significantly contribute to the sustainable development of the chain.

In the production phase, SC rice growers are financed in advance the cost of fertilizer (right time, right type, and right application) by both VBARD and fertilizer companies. To do that, growers registered with the local authorities the land area cultivating SC rice and the quantity of fertilizer needed in this cropping season. The local authorities here include the village head or the leader of CIG and the extension staff working in the commune. After that, the list of SC rice producers, their land, and desired fertilizer was transferred to the commune as the confirmation and guarantee. Next, the representative authorities/person signed a contract with VBARD for taking a loan in accordance with the total cost of fertilizer registered and paid back at the harvesting time. After VBARD paying directly to a preselected fertilizer company, producers were able to receive the amount of fertilizer required. As per Miller and Jones (2010), this mechanism is called ***Input Trade Credit***.

Besides the advantages regarding the quality of fertilizer, these farmers also received the technical assistance provided by local extension and technical staff of the company in order to achieve suitable input management toward sustainability. Obviously, sustainable farming practices result in a reduction of natural resources used, being a friendly ecosystem, and achieve a high quality of paddy output. It is noted that Seng Cu rice often has the highest selling price in the national market, serving the high-class customer groups and requiring the high quality of rice. However, according to Bui et al. (2018), improper farming practices are relatively popular in both of the two ecological rice production in the locality. More detailed, lowland producers tend to overuse chemical fertilizers and pesticides in order to pursue the maximum yield. As a result, chemical residuals likely have occurred more seriously, which was reflected through not only the comparison between the actual input usage of households surveyed and the dosage recommended by local extension, but also the local customer's survey. By contrast, ethnic minority producers in uplands applied few commercial inputs because of their limited financial resource that leads them to achieve under-optimal productivity and income. Therefore, technical guides play a crucial role in the improvement of technical efficiency based on the principle gain more for less introduced by World Bank (2016).

Besides the linkage mentioned above, the contracts were established between producers and agro enterprises, namely Tien Phong Cooperative (T.P.C) and Muong Khuong Cooperative (M.K.C) (hereinafter called the linkage ***contract farming***). There are two differences existing between these linkages. The first regards to price regulated in the contract. M.K.C determines a fixed purchasing price at the beginning of the season, while T.P.C defines the market price at the harvesting time. The second point is the level of tightness of the link. M.K.C only concerns with

trading dead paddy product, while T.P.C involves in the whole flows of product in order to control the quality of output.

In the production phase, the T.P.C finance in advance to producers linked some kinds of important inputs, such as certified seeds, organic pesticides, and rice fertilizers. In addition, technical services related to disease management and input applications are also provided freely to farmers. At harvesting time, the unit participates together with farmers to reap and buy fresh paddy in the fields. The activities not only enhance the helpful linkage but also avoid significantly the fact that some farmers mix other ordinary rice with Seng Cu dried paddy in order to get higher profit. At the processing stage, the T.P.C has been focusing on innovation and investing in the full-option set of machinery, including dryer, miller, polisher, wrapper, and vacuum-packed machine. As a result, mechanization helps the T.P.C obtain not only the leading quality of milled rice, but also a higher recovery rate of milled rice after processing, compared to others (Bui et al., 2019). In addition, this cooperation hardly attempts to optimize value addition generated from SC rice products, such as white rice, brown rice, germ rice, and alcohol, and by-products. As a result, the value addition for all participators involved in the channel was significantly enhanced (Lam et al., 2019).

Unfortunately, financial problems are the most difficult drawback hindering the expansion of the T.P.C. Controlling the quality of input and output, the T.P.C strongly needs working capital, especially in harvesting time to collect fresh paddy. This is the reason T.P.C just can collect about 700 tons at the time of repeated surveys conducted in 2018, using only one-third of the actual capacity of the machines invested. This creates a large amount of depreciation and undermines their profit. Clearly, the T.P.C—the leading actor of SC rice chain—needs to scale up its coordination attempts to fully utilize the plant capacity. From the viewpoint of farmers, their productivity needs to be improved significantly through technical assistance, their output volumes need to ensure about selling price by the contractual agreements, not by spot transaction with local traders, and their livelihood needs to be more suitable even when external or internal shocks occur. Many farmers want to join the T.P.C's linkage in order to take advantages mentioned above; however, the limited financial capacity of T.P.C hampers their coordination.

Despite its high potential, the cooperative is still evaluated under creditworthiness and got a small size loan at 2 VND billion at VBARD, compared to their desire at 4–6 VND billion. The reason regards to the assessment of collateral (e.g., land use certificate) by this bank, which was much lower than the marketed value. As per the WorldBank (2014), the collateral-to-loan ratio in Vietnam was at 218%, which was higher than most ASEAN nations. Thus, in order to boost better the agricultural sector, it is necessary to support the leading actors in the chain, like T.P.C, to access banking credit and other appropriate facilitations. Clearly, banks should simplify their procedures and easy credit assessment to select and fund potential customers while ensuring minimum payment risk.

Finally, the study presents an increasingly important cooperation among farmers, that is, horizontal links through ***Common Interest Groups*** (CIGs). This model is more popular in uplands than lowlands. In Muong Khuong alone, there are about

333 Seng Cu rice-growing households belonging to 21 CIGs in 2 studied communes. It is notable that 73% of the total households participating were the poor. Being a CIG's member, they receive vast advantages than before. *Firstly*, group's members often share their work in the field, such as land preparation, disease management, transplanting, and harvesting. The share is meaningful to mitigate expenditures for seasonal labor hired, often with a high price. In addition, it leads almost rice to have the same phase of growth (vegetative, reproductive, ripening), and then, to gain the higher productivity and the better quality (GRiSP, 2013). Furthermore, it is also able to facilitate the use of harvesting machines and reduce the paddy losses. They also often create internal discussions in order to exchange agricultural knowledge, skill, and advanced technologies, which lead to an improvement in the production capability of each member as well as the whole group. *Secondly*, the CIG members can access easier agricultural extension and/or participate in the contract with enterprises, like T.P.C and M.K.C mentioned above. Not stop here, they also have broadly benefited from technical training granted by enterprise linkage. In addition, in the trainings, the farmers are informed of the requirements and organization of the commercial supply chain. *Thirdly*, farmer members also take advantage of collective transactions (together buying, together selling); this helps them get better prices based on the increase of bargaining power. This judgment is confirmed through the comparison of the surveyed households, who often got worse price from traders.

It is a common belief that the right finance at the right time helps farmers to have greater efficiency and the better quality of agricultural products, thus, increase their incomes (Bui et al., 2018). It is more clearly in the case of SC rice because market-oriented agricultural products often require a strict regimen, which means intensive farming and use large labor for input management as well as and pre- and postharvest (Key & Runsten, 1999). Therefore, agricultural finance should create a supportive ecosystem approach to achieve the twin goals at intergovernmental and national levels in reducing poverty and creating shared prosperity for farmers. Figure 37.4 illustrates the empirical evidence of the financial and non-financial ecosystem existing in the Seng Cu rice value chain. More broadly, this significantly contribute to obtaining the triple bottom line (planet, people, and profit), the term is coined by John Elkington (2013) in 1994. However, this judgment should be clarified by further research in the future.

4.3 Impacts of Contract Farming on Seng Cu Rice Production in Lao Cai

In this section, the study presents the impacts of contract farming established between farmers and enterprises in the *Seng Cu rice value chain*. To do this, a comparison between two groups of Seng Cu rice producers: (i) who have participated in the contract with T.P.C and M.K.C versus (ii) who have not participated yet (hereinafter: contracted and noncontracted farmers). To have a better understanding

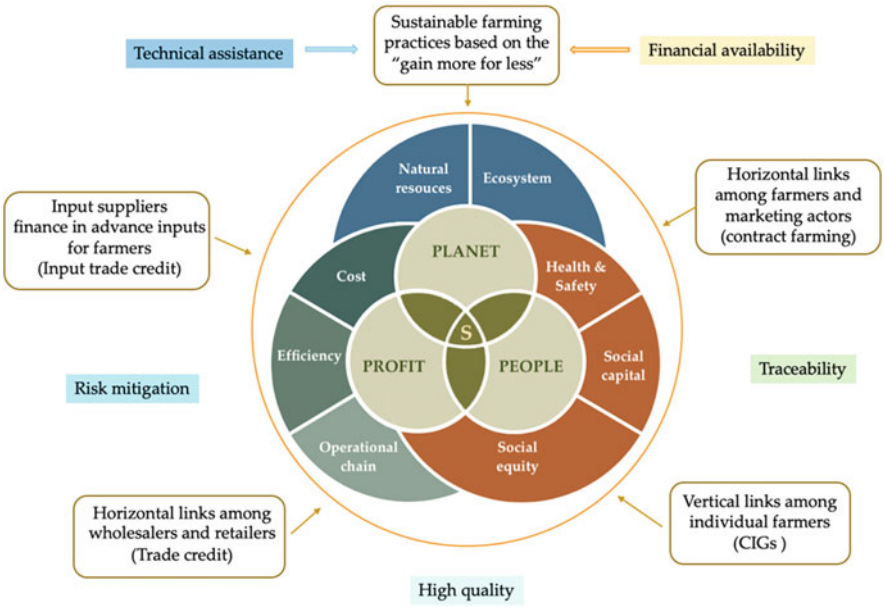

Fig. 37.4 Impacts of value chain mechanisms. (Source: authors' illustration)

about how Seng Cu rice producers and the whole chain operate, please kindly refer our previously published papers (Bui et al., 2018, 2019).

To start, the definition of contracting and noncontracting households needs to be clear. We consider farmers associated with contracts to receive special benefits in terms of technical guidance provided by linking enterprises. The first group is SC rice cultivators linking with the fertilizer supplier (input trade credit) and the second group associated with the T.P.C (contract farming) as described above. The study points out that contract farming results in increasingly commercializing of input used, higher farm-gate prices for many, and substantially contributing to growing up rice output, value addition, and technical efficiency for almost households linked. Obviously, their income is remarkably increased, and Seng Cu rice production is the main generating income source of many households interviewed. In addition, most respondents desire expansion of the SC rice area in order to improve their livelihood.

Table 37.3 depicts clearly about Seng Cu rice production among three household groups: small, medium, and large scale cultivating area. It can be seen that large-scale producers tend to link with enterprises higher than smaller ones. For instance, 82.5% of large producers signed the contract with the enterprise, meanwhile this rate of the medium and small groups just were at 41.3% and 22.5%, respectively. It is evident that, usually, the larger farmers own many socioeconomic advantages, compared to the others. They have higher educational levels; easier access to public services and likely more success in application technological advances (IPM); better financial availability (Bui et al., 2018).

Table 37.3 Impacts of contract farming on Seng Cu rice production in Lao Cai

Items	Small-scale HHs			Medium-scale HHs			Large-scale HHs		
	Contract ($n = 9$)	Noncon. ($n = 31$)		Contract ($n = 33$)	Noncon. ($n = 47$)		Contract ($n = 33$)	Noncon. ($n = 7$)	
I/intermediate cost (IC)									
Seed (1000 VND/ha)	2220	2445	N/S	3224	3141	N/S	3457	2736	*
Fertilizer (1000 VND/ha)	7233	6073	**	7413	6669	**	6546	6517	N/S
Pesticide (1000 VND/ha)	1704	1561	N/S	2585	2731	N/S	3789	3887	N/S
Total (1000 VND/ha)	11,157	10,079	N/S	13,221	12,541	N/S	13,792	13,140	N/S
II/output									
Productivity (kg/ha)	5014	4073	***	5303	4578	***	5404	5143	**
Selling price (1000 VND/kg)	14.94	14.49	N/S	14.92	14.23	**	14.82	15.04	N/S
GO (1000 VND/ha)	74,969	58,930	***	78,926	65,039	***	80,059	75,912	N/S
VA (1000 VND/ha)	63,812	48,851	***	65,705	52,575	***	66,461	63,285	N/S
Technical efficiency score (%)	87.23	76.72	***	90.18	81.71	***	92.07	87.41	**

Source: authors' calculation
Note: HHs households, *noncon.* noncontracted, *GO* gross output, *VA* value-added

Concerning input management, contracted households improve the proportion of certificated seeds instead of using self-preserved rice varieties from the previous year because they were financed in advance from enterprises linked. It should be noted that the quality of seed is decided strongly based on the quality of rice in terms of its odor. Besides this, technical experts hired by the enterprise advice about the quantity of fertilizers and pesticides used based on the nutritional needs of rice plants at specific growth phase. For example, almost lowland producers in the locality overuse the urea fertilizer and abuse chemical inputs that hamper rice plants and the environment as a whole. Contrary, upland growers used mainly home-made agricultural input with much lower quantity compared to the dosage issued by the local extension (Bui et al., 2018). Based on these findings, there is a large room to improve the productivity and quality of paddy output.

Obviously, outputs and effectiveness are always the most important indicators in agricultural production in particular as well as other economic performance in general. Table 37.3 continuously proves the significantly positive impacts of contract farming on Seng Cu rice production in terms of higher productivity and farm-gate price as well as larger value addition and technical efficiency. Again, these results reinforce clearly the qualitative analysis of the role of internal linkages (i.e. contract farming and CIGs) in the value chain, which is described in Sect. 3.2. It is also consistent with the findings in the work of Maertens and Velde (2017) and Swain (2013), who conducted the study on rice value chain in Benin and South India, respectively. More broadly, a vast amount of empirical evidence from researchers studied on other commodities have also confirmed the positive effect of contract farming (Ajao & Oyedele, 2013; Nguyen et al., 2015; Saigenji & Zeller, 2009; Wang et al., 2014). These findings, however, seem likely inconsistent with the several arguments of Rehber (2007), who show a lot of latent drawbacks of contract farming, especially small farmer, such as delays in delivery or payment, or both; bargaining power; and regulations about marketable quantity of output and its selling price. The study of Ho and Burny (2017) examined the contract farming between shrimp producers and enterprises in Ben Tre province, belonging to the Mekong River Delta of Vietnam. It reveals that this model after a two-year application failed due to the floor price intervention, risk sharing, small scale of the output, and inefficient public administration. Consequently, farmers stayed at the weakest position and the shrimp value chain also still under-developed compared to its potential. The solution to overcome these bottlenecks suggested by Ho and Burny (2016) is a new appropriate governance in order to improve farmers' position and their income.

Finally, within each household group in Table 37.3, surprisingly, small-scale farmers gained the highest margin if they participate in the chain and make a contract. For example, compared to noncontracted farmers, small contracted producers got higher productivity at 941 kg/ha; meanwhile, this increases at the medium- and large-scale group at 725 and 261 kg/ha, respectively. This enhancement is relatively similar to the indicators of gross output (GO) and value addition (VA). Moreover, the remarkable influence of contract farming at the small-scale group in terms of technical efficiency is also very clear. Participating in a contract with the enterprises helps small farmers to increase of 10.5% of technical efficiency, whilst this rise of medium and large scale producers are at 8.5% and 4.7%, respectively. However, our result is a little differential in terms of technical efficiency with the study of Nguyen et al. (2015), who indicated that the influence of contractual agreements on tea productivity was still ambiguous. It is concluded in this case study that contract farming helps farmers to improve their agricultural production and income as a whole.

More importantly, contract farming plays an essential role in terms of the creation of economic opportunities and improvement in their livelihood as well as poverty reduction and inequality in mountainous areas of Vietnam. This is in line with the findings of many researchers (Miyata et al., 2009; Olomola, 2010; Saigenji & Zeller, 2009), who stated that small farmers and the poor also get more benefits from

contract farming. On the other side, the study of Guo et al. (2005) in China expressed critics of contract farming that only benefited large-scale farmers, at the same time, push smallholder farmers out of the market as isolated among their rural communities. Thus, contractual agreements likely cause inequality and exacerbate the level of poverty. Luckily, in this study, Seng Cu rice is an attractive production and brings high economic value for producers, especially ethnic minorities and the poor, small households. Moreover, contract farming is still a good tool to boost agricultural production and strengthen the value chain working better for the poor (M4P, 2008).

5 Conclusions and Recommendations

This study analyzes the credit demands of main chain participants and financial mechanisms existing in the SC rice value chain in Lao Cai province. Among chain actors, the study focuses on producers, who directly determine the paddy output in terms of quality and quantity in the production phase and marketing actors, who control quality of rice milled in the postharvesting phase.

Many producers have high credit demands for finance high-quality inputs (certificated seed, fertilizer) and self-made irrigation and agricultural machinery. Large collectors want to borrow money from banks to replace their current out-of-date milling and processing machinery system. T.P.C, the leading actor in the chain, also has high demand for working capital to pay in cash for producers at the harvesting time and continuously invest in innovation. However, in practice, a large proportion of chain actors face difficulties in banking credit access, which derived from a lack of collateral. The decision making of the bank on the lending approval is still based on collateral and individual repayment capability of chain actors, instead of the potential of the whole chain as well as the linkages they participating in.

Qualitative analysis of Seng Cu rice chain proves that AVCF approach creates the financial ecosystem, significantly enabling all chain players performing effectively and coordinating rhythmically. Based on this, agricultural products generated more sustainably and controlled better its quality along the marketing channels. More broadly, the combination of internal and external financing in AVCF remarkably contributes to achieving the 3P triple bottom line (planet, people, and profit).

The paper highlights the importance of technical assistance provided from enterprises and the contract farming established among them and farmers in the chain in the context of public agricultural subsidies working ineffectively and/or costly. Although there is not much difference in the costs of input used between contracted and noncontracted household groups, the structural transformation among what kind of input applied is significantly different. More specifically, the contracted households were funded in advance high-quality and appropriate inputs for rice, which significantly improved yields and quality of paddy output. In addition, they also receive a stable and better price with adjustments based on market price fluctuations at transactions occurring. Finally, the important benefit of linking production and consumption is the risk sharing as a commitment to delay debt obligation at the

harvesting time and continuously finance in advance raw materials to farmers in the next seasonal cropping. This is a great effort of T.P.C in building and developing input material zone for the processing industry. However, the current financial shortage and limited credit access are still the major obstacles of T.P.C in particular and agribusiness in general. This hinders T.P.C expand the links with other farmers as well as undermines marginal profit because of high depreciation for a small paddy volume purchased.

Concerning solutions to overcome these drawbacks mentioned above and develop the agricultural sector, the authors propose a model of public–private partnership. In Vietnam, the policies on the linking among four partners (liên kết bốn nhà), including farmers (nhà nông), enterprises (nhà doanh nghiệp), scientists (nhà khoa học), and government (nhà nước), has been issued. However, the roles and functions of each component are unclear, and even sometimes, the intervention is unreasonable. Furthermore, another key actor regarding agricultural investment, banks (nhà băng), has not participated in this cooperation. Yet, sustainable the agriculture development requires the involvement and collaborations among five crucial players in order to share the mutual benefits, risks, and making decisions.

Here, the concept of finance for agriculture needs the parallelism of specific levels as follows:

1. *Central and local policy maker*s.

Assign the offices and persons responsible for detailed plan establishment and deploying of the activities of breakthrough strategy (S-O) and protection strategy (T-W).

Support and strengthen the performance of CIGs and its team leaders in terms of management capacity, responsibility, and prestige to link successful business.

Exploit effectively the supporting packages in accordance with the concerned targets and players. In which, building the productive infrastructure for agriculture development in rural areas is the most important component that the private sector is nearly unachievable due to their limited finance.

More broadly, local authorities should determine and develop special agricultural products, like Seng Cu rice, temperate fruits, and vegetables, that are strongly supported by natural endowment. Obviously, farmer households involved in the local specialties are able to improve their income and living standard; therefore, the agriculture sector becomes an attractive economic activity itself without direct subsidies from the government.

2. *For CIGs and individual farmers:*

Farmers need to follow technical assistance of the input management and other advanced farming practices as required by enterprises.

After signing the contract, they need to keep prestige in the production–consumption contract, not for immediate benefits. It is important to note that the role of communal authorities plays a crucial role in their enforcement.

3. *For linked companies and other marketing actors*.

It is necessary to reach other niche segments of both domestic and export markets in order to get high economic value for enterprises and the chain as a whole. It is totally possible because Vietnam has signed a vast of regional and bilateral free trade agreements worldwide and joined various concessions, such as ASEAN, APEC, AEC, WTO, TPP, and EVFTA.

Almost large collectors need to enhance and/or replace the outdated machinery in processing phase to get higher quality of milled rice and improve the storing conditions to reduce paddy losses in quality and quantity.

To access banking credit, agribusinesses need to enhance their creditworthiness by reducing three existing weaknesses: (i) Standardize the financial reports according to the current regulation; (ii) Increase the use of banking service in transactions, which allows banks to capture cash flows of agribusiness; (iii) Enhance the management capability and the effectiveness of loan use.

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Conflicts of Interest: Data are not anonymized, and the manuscript has been sent to all coauthors and relevant participants. Face-to-face interviews conducted make sure that all respondents clearly understood the given questions. The authors declare no conflict of interest.

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Chapter 38
Improving the Position of Ethnic Minority Women Through the Policy of Credit Support for Poor Households: A Case Study of Northern Mountains of Vietnam

Dang Thi Hoa, Bui Thi Huong Tram, and Nguyen Danh Loi

Abstract This paper reviews the barriers to ethnic minority women in the development and effectiveness of the credit assistance package for women in poor ethnic minority households in the northern region of Vietnam. Based on data on poor ethnic minority household survey, covering 1685 ethnic households of 4 provinces (Lang Son, Ha Giang, Dien Bien, and Thanh Hoa) in 2018, the analysis emphasized the usefulness of ethnic minority women's capital and the support of Women's Union to help members use loans effectively. Since 2003, the Government of Vietnam has launched the solution in poverty reduction strategies and sustainable development in ethnic minority areas in the policy package to support loans for poor minorities. Through the credit support package, ethnic minority women are more proactive in planning production and selling products, with higher incomes from household production activities. Ethnic minority women have overcome many barriers to take initiative in accessing bank credit for household economic development. The credit has been used for development of household economy and improving their position in the family and community, toward sustainable poverty reduction.

Keywords Poor household · Credit support · Gender equality · Ethnic minorities · Policy · Sustainable development

D. T. Hoa (✉) · B. T. H. Tram
VASS Institute for Family and Gender Studies, Hanoi, Vietnam

N. D. Loi
Ho Chi Minh National Academy of Politics, Hanoi, Vietnam

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1 Introduction

Ensuring equality for women is one of the social development indicators toward the sustainable development of every nation and ethnicity in the world. Discrimination against women through economic discrimination, inequality in education, health, and participation in political activities are obstacles of development in countries nowadays. Therefore, empowering women in the family, community, and society is one of the important contents of the agendas to achieve the goals of the millennium. In national development strategies, upholding women' position through empowerment of women in social communities which still preserve the remaining cultural values of gender inequality is of great significance.

The issue of discrimination and gender inequality still exists quite commonly in the context of a developing society; the ability to reach sustainable development goals is difficult to achieve when the disparity in gender equality rights remains high between men and women, especially in developing countries. Gender inequality is quite common in cultures around the world and becomes a constraining barrier to national development when there are no steps to improve it and to enhance the role of women in maintaining their families, integrating into the community. Gender inequality from an economic perspective and affirming the role of women in household economy are still posing a lot of problems in many cultures and in developed countries (Endalcachew, 2016). Women's empowerment and household economic development are closely linked together in the direction to reduce gender inequalities, and women's empowerment may be of great advantage for development (Duflo, 2012; Bradshaw et al., 2017).

Women's economic empowerment is one of the factors that achieve equality when economic disparities persist with a significant portion of women working unpaid and women suffering from too much work including both housework and income-generating work, but do not play a decisive role in the economy of the family. Improving the status of women requires a new perspective in the plan to build a sustainable growth economy, enabling more women to enter the labor force and achieve decision-making positions, equally influential as men. Women must also have employment and self-development opportunities to promote economic development.

For developing countries, participation in the agricultural and forestry development job market combined with women's rights in household finances is of utmost importance. In addition to women's participation, sharing among family members in both employment and decision making will foster the household economy, strengthening women's position in the family and community (Carol et al., 2015). When empowered, rural women have access to family labor, control of resources, access to leadership positions or external communication, and proactively manage savings and credit, and their income would be improved (Galab et al., 2003).

The Government of Vietnam has made great efforts to improve and promote women's participation in economic and social life activities. One of the most effective promotion policies is to support loans for women in households and

improve their capacity with literacy programs, awareness-raising training and technology transfer, science, and technology to enable women in ethnic minority and remote areas to participate more fully in the job market and the economy (WB, 2016).

Vietnam has 53 ethnic minorities; regional diversity and ethnic cultural diversity have an important influence on women's participation in the labor market and the economy. Developing personal finance based on community supervision and assistance in poverty reduction can both exploit the efforts of households and promote the value of social capital and cultural capital of Vietnamese people (VASS, 2008: 14). One of the effective ways to reduce poverty in Vietnam is to support production for households through the preferential investment package for poor households from the social policy bank, especially for poor households of ethnic minorities. Through sociopolitical organizations, including the Women's Union, women are given the rights to manage and autonomize loans and be responsible for planning activities, production project development, disbursement, and supervision of implementation process to ensure that the safety of capital is rotated and developed in the community (CSCRAFC, 2016; GSO, 2014; WB, 2012: 122). As a result, up to 80% of ethnic minority households have access to loans with low interest rates, infrastructure investments, and use of agricultural extension cash for households with land and development of livestock husbandry (WB, 2012: 133, 139; ADB and UN Women, 2018). However, whether ethnic minority households are rich or poor depends on gender characteristics in the work division and the ability of women to speak national language in the household. That is, when women take the initiative to overcome barriers and receive state policy support packages, they will know how to develop household economy and overcome poverty (GSO, 2015).

2 Methodology

To study the position of ethnic minority women through the policy of credit support for poor household, we use the field survey method with household survey in the form of descriptive statistics, in-depth interview, and observation method in the field. The analytical data source used in this article is from a field survey of a national topic on some of the basic issues of gender equality in ethnic minority areas by the Institute for Family and Gender Studies in 2018 and 2019 based on a survey of 1685 household representatives of 7 ethnic minorities in 8 provinces representing the Northern Uplands including Dien Bien, Ha Giang, Lang Son, and Thanh Hoa provinces. The ethnic groups selected in the survey sample include Tay, Thai, Nung, Muong, Hmong, Dao, and Khmu, representing ethnic groups under the patriarchal system mainly in mountainous provinces in north and north central region.

The household questionnaire was designed with the goal of assessing gender equality in Vietnam, including questions related to household borrowing and gender equality in the field of household economy. The independent variables in the

analysis of the paper include ethnicity, gender, and type of household. The dependent variables identified include living standards, loan needs, loan status, family decision-making power, and position in the family. Quantitative data were analyzed and processed on SPSS 20.0. In-depth interviews and participatory observations were also used to find out the true position of women through their stories in daily life, studying the attitudes and perceptions of ethnic minority women about their credit loan packages and the changes in their decision-making rights to family life and production.

The researchers of this study have implemented the confidentiality regulations for information providers. Participants in the study voluntarily agreed before the interviews began. In-depth interview partners are well-informed and aware enough to answer interview questions.

3 Results

3.1 Current Position and Obstacles of Ethnic Minority Women in the Household

Ethnic minorities in the Northern Uplands are very diverse in cultural identities. Most of the ethnic minorities in the Northern Uplands are patriarchal with characteristics that promote the role of men in the family and society. Paternalism is ingrained in not only men but also the acceptance of women. Therefore, women of ethnic minorities in the North often have a weaker position than men in both family relationships and with the community and society.

In the context where most of the ethnic minorities in Vietnam still rely on shifting cultivation and terraced fields, the main source of income is agricultural production with small-scale production, mainly growing food crops and short-day plants. Up to 78% of households have their income mainly from farming and raising cattle and poultry on a small scale. Activities of commodity production have not yet been formed, but mainly production of food crops and afforestation. The standard of living for households is moderate and poor (Table 38.1).

Comparing living standards among ethnic groups, some ethnic groups residing in lowland and delta areas have better living standards such as Tay, Thai, and Muong with low poverty rate. Ethnic groups residing in upland areas such as Hmong, Dao, and Khmu have lower living standards with the poverty rate accounting for over 50% of the households. In particular, some ethnic groups have a very high rate of extremely poor households such as Kho mu, Thai, and Hmong (see Table 38.1) .

For ethnic minorities with a high proportion of poor households, women in these ethnic groups suffer from the double disadvantages of poverty, illiteracy, a high risk of food shortage, and a high risk of illness (UNDP, 2014; UN Women and CEMA, 2015). Therefore, one of the preferential policies in the poverty reduction policy of the Government of Vietnam is that women are given priority to borrow money from

Table 38.1 Living standard of households by ethnicity

	Living standard***				
	Moderate	Average	Poor	Very poor	*N*
Tay	12.0	72.0	14.7	0.7	150
Dao	4.0	35.0	58.0	2.5	200
Nùng	8.0	66.9	24.6	0.6	175
Thái	11.2	34.4	46.8	7.2	250
Mường	8.0	58.4	31.2	1.2	250
Hmong	2.5	38.5	54.5	3.6	442
Kho mu	5.8	27.1	59.4	7.7	155
Bo Y	7.9	65.1	27.0	0	63
Chung	7.3	44.3	44.6	3.4	1685

Source: The 2018 Survey in North of Vietnam. Note: Significant level: *** $P < 0.000$

Table 38.2 Houses and land ownership by gender

	Ownership of house/land***				
Ethnicity	Husband	Wife	Both	Other people	*N*
Tay	60.0	6.0	10.0	24.0	155
Dao	60.5	2.0	6.5	30.0	200
Nung	63.4	5.1	6.9	24.6	175
Thai	66.4	6.8	8.4	18.4	250
Muong	75.6	2.4	3.2	18.8	250
Hmong	61.3	0.9	16.7	21.0	442
Kho mu	61.9	0	4.5	33.5	155
Bo Y	69.8	7.9	11.1	11.1	63
Chung	64.7	3.1	9.2	26.4	1685

Source: The 2018 Survey by Institute for Family and Gender Studies. Note: Significant level: ***$P < 0.000$

banks to develop farming and livestock husbandry in households. In fact, women in the family are always the main labor, doing economic activities such as farming and raising animals, but very little is allowed to participate in external social activities, little communication, and learning from training courses and technical science training (CIEM, 2009; Vietnam Government, 2017).

One of the significant barriers for ethnic minority women in the Northern Uplands is that housing ownership is often for men. According to the patrilineal system, the male inherits the property, so he owns the main property, mainly houses and land. The right to inherit and own land to women is negligible. Therefore, this is also a cultural feature that is a significant obstacle to the development of ethnic minority women (Table 38.2).

So far, due to cultural, linguistic, and geographical barriers, ethnic minority women have suffered quite a lot of disadvantages in development opportunities, especially access to the achievements of social development process and renovation.

Table 38.3 Decision-making rights in the family (%)

	Decision maker in business and production***			Decision maker in house purchasing/ selling/renovation***			Decision maker in family and community relationship***			
Ethnicity	Man	Woman	Both	Man	Woman	Both	Man	Woman	Both	*N*
Tay	8.7	**2.7**	88.7	9.3	**0.7**	90.0	4.0	**0.7**	95.3	155
Dao	35.0	**3.5**	61.0	36.0	**0.5**	60.0	21.5	**2.5**	75.5	200
Nung	17.1	**4.6**	78.3	19.4	**2.3**	78.3	12.6	**2.3**	85.1	175
Thai	34.0	2.4	63.6	18.8	2.4	63.2	10.8	2.4	86.8	250
Hmong	34.2	**3.6**	57.9	47.3	**1.6**	50.2	25.6	**2.5**	71.0	442
Kho mu	34.2	**3.2**	61.9	41.9	**1.3**	54.8	13.5	**5.8**	80.6	155
Bo Y	33.3	3.2	63.5	23.8	3.2	60.3	20.6	3.2	76.2	63

Source: The 2018 Survey. Note: Significant level: ***$P < 0.000$

In the family, women are the main laborers but have little decision-making power and are always considered to be disadvantaged in the family. The decision-making power mainly rests with men both in business and production, buying and selling large assets, building houses, or in relationships between families and relatives and the community.

The results in Table 38.3 show that women in the family have almost no rights to make decisions, including the main tasks they have to undertake such as cultivation, planting, and livestock husbandry. Meanwhile, men may only participate in a few stages of production but are the ones who have the main rights to decide in most family tasks. There is a clear difference in some ethnic groups; for example, in the Tay and Nung ethnic groups, the proportion of both husband and wife making decisions is quite high, showing the agreement and equality between husband and wife, while among the Dao, Kho mu, decision-making authority mainly belongs to the man in the family. This shows that the status of ethnic minority women in the family is very low, depending heavily on the decisions of men.

Survey results show that patriarchal peoples of the Northern mountainous region still keep the traditional cultural habits, the wife only manages daily expenses and keeps money, and the husband makes the main decision in economic planning, purchasing, house repairs, or outside relationships such as attending training courses and technical training on agroforestry production. The level of participation of wives is existing but not much, especially in economic planning activities of households.

3.2 Empowering Ethnic Minority Women in the Household Economy Through Loan Support and Poverty Reduction Policies

In order to implement the strategy of poverty reduction and sustainable development in ethnic minority areas, the Government of Vietnam has implemented a preferential

policy to support poor households to get credit loans to develop household economy. The Vietnamese Government has issued the Government's Decree No. 78/2002/ND-CP of October 4, 2002, on credit for the poor and other policy beneficiaries. The Social Policy Bank has worked closely with sociopolitical organizations at the grassroots level to bring social policy credit capital to communes, wards, and townships throughout the country, loans to ethnic minority in deep-lying, remote, border areas and extremely difficult areas, etc.

Up to now, the Social Policy Bank has been implementing credit programs, and a number of credit projects to poor households, in which priority is given to poor and near-poor households, and especially poor ethnic minority households that have the needs and conditions to borrow capital, can borrow loans from Vietnam Bank for Social Policies (VBSP) to invest in real estate, business, to improve life. Particularly for ethnic minority households living in extremely difficult areas, the Policy Bank also implements credit programs for ethnic minority households in specific regions, conditions and specific subjects, and favorable procedures with preferential loan rates.

The Social Policy Bank has coordinated with the Women's Union at all levels to integrate loan packages with socioeconomic development programs in each locality, such as converting crops, livestock, vocational training, technology transfer, and forestry extension. All levels of the Women's Union through their membership network review and lend to the right beneficiaries, focusing on giving priority to poor ethnic minority women and policy beneficiaries in poor districts and using capital effective loans, and assign experienced staff to supervise and support families to borrow, especially women use loans for the right purpose and timely support when there are risks happening.

According to a report of the VBSP, Women's Union is one of four associations and unions that sign trust with the highest loan amount, with the highest number of ethnic minority women taking loans. The access to loans with preferential interest rates of social policy bank has actively supported ethnic minority women to develop household economy. Many models of household economic development based on women's knowledge about cultivation, husbandry, and handicrafts have been promoted, which is a solid basis for poverty reduction among ethnic minority households. Nationwide, there are 1.4 million ethnic minority customers with a total loan balance of over 48 trillion dong, accounting for 24.8% of the social policy bank's outstanding loan amount. The average loan per ethnic minority household is VND 33.3 million (compared to the national average of VND 29.7 million/household). The Women's Union has a total outstanding loan of over VND 60 trillion, accounting for 31% of the policy bank's debt with 3.2 million customers, of which 617 are ethnic minority women with a loan balance of VND 15 trillion VND (an average of VND 26 million/household) with 10,957 loan transaction points nationwide (Vietnam Policy Bank, 2019).

Along with small credit loans, ethnic minority women have more access to training on science and technology and applications in production and diversification of agricultural products. Through actual observation in field trip in ethnic minority communities, the percentage of women participating in community activities and

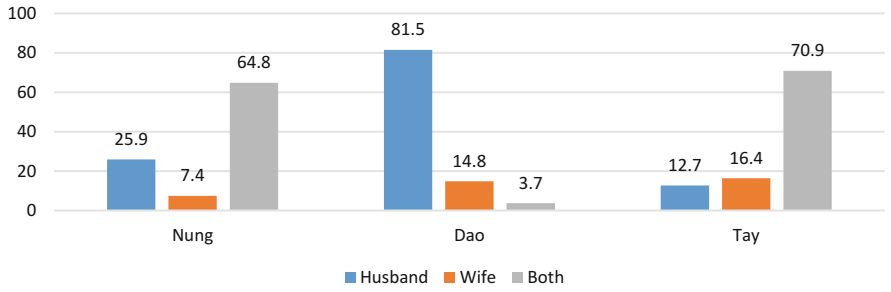

Fig. 38.1 The rights to decide on a loan between husband and wife (Source: Hoang Le Thao et al., 2012)

training in science and technology has increased significantly (GSO, 2014). Microcredit loans are very suitable for ethnic minority women. Ethnic minority women have more clearly defined strategies for family economic development, changing their perceptions of rising themselves out of poverty.

Since the preferential policies on lending to poor ethnic minority households do not require mortgage assets, with very low preferential interest rates, many ethnic minority households have been applying for development investment loans for household production. The status of ethnic minority women in the families in Vietnam has changed dramatically since they were involved in programs to support household economic development. When poor women have access to microfinance, they are empowered to bring into full play their economic capacity and to actively participate in family economic activities, increase labor productivity, and increase their voice in the family and in the community (Mayoux & Linda, 2000).

The results of the 2012 survey by Institute of Ethnology on poor women who took out loans in poverty reduction in Ha Giang province show that the main decision maker for loans in the family is the husband. There is a difference in the rate of consensus between husband and wife who decides to borrow capital among ethnic groups, such as the Tay and Nung ethnic groups; the percentage of consensus between husband and wife is higher than that of Dao ethnic group (Fig. 38.1).

Compared to the most recent 2018 survey by the Institute for Family and Gender Studies, the right to make a loan has changed. The wife's decision rate is higher, and the rate of consensus between husband and wife also increases.

Figure 38.2 shows that, in many ethnic minorities, men are still the main decision makers of household loans. Even in matriarchal ethnic groups such as the Ede, the Cham, and the Khmer, men still have the main rights to decide on the family's borrowing and production activities. Therefore, the voice of women has no weight when they have little decision-making power in the family, especially the decision-making power in loans, production activities, and management of family expenses and assets.

From that practice, in the process of implementing the policy for loans to poor ethnic minority households, the Women's Union has supervised lending procedures,

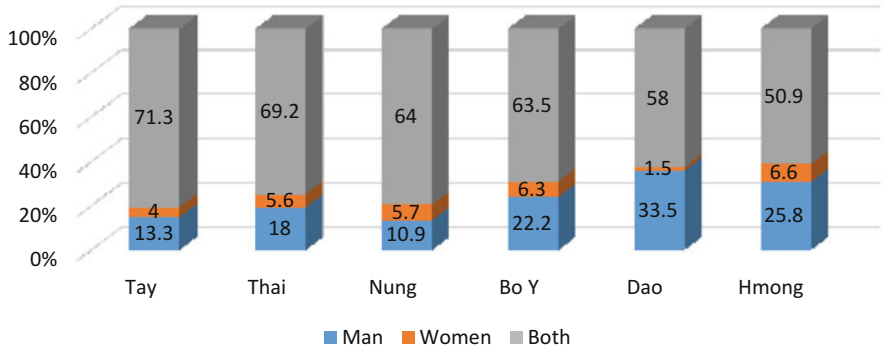

Fig. 38.2 Principal borrower of household loan. (Source: The 2018 Survey by Institute for Family and Gender Studies; Note: Significant level: ***$P < 0.000$)

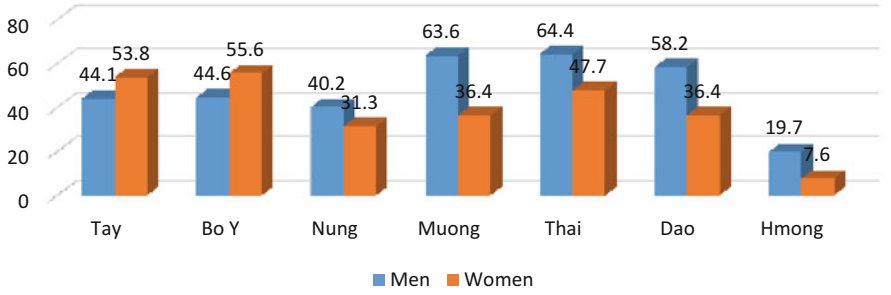

Fig. 38.3 Demand for loan of ethnic minority men and women. (Source: The 2018 Survey by Institute for Family and Gender Studies; Note: Significant level: ***$P < 0.000$)

instead of the husband who is the head of the household receiving borrowing capital on behalf of the household; the loan application must be agreed and signed by both husband and wife. Even the Women's Union encourages women to boldly take out loans, with the consent of their husbands to develop production.

Surveying the need for loans, ethnic minority women have seen significant changes when their individual loan needs change. Instead of depending entirely on the male in the family, many women bravely apply for loans and invest in production activities, especially in the fields of cultivation and livestock husbandry. Women are always the main persons responsible for these activities.

Figure 38.3 shows that, among some ethnic groups, women's loan demand is on par with that of men, especially among some ethnic groups residing in the valleys (Thai, Tay, and Nung). As for ethnic minorities living in upland areas with very high poverty rates, the demand for loans of women is much lower than that of men. This shows the cultural barriers and many other factors such as ethnic minority women who are still illiterate and have less communication with outsiders; many ethnic minority women are not brave enough to take capital loan in banks, especially preferential packages of social policy banks.

Table 38.4 Name of borrowers in the loan application***

	Name of borrowers in the loan application					
	No loan yet	Husband	Wife	Both	Others	*N*
Tay	23.3	29.3	28.7	12.7	6.0	150
Dao	19.0	62.5	4.0	9.0	5.5	200
Nung	50.9	32.0	9.7	3.4	4.0	175
Thai	20.4	38.4	11.6	25.2	4.4	250
Muong	12.4	40.4	**38.0**	2.8	6.4	250
Hmong	50.2	33.3	2.7	8.4	5.4	442
Kho mu	28.4	45.2	3.2	16.8	6.5	155
Bo Y	20.6	47.6	17.5	4.8	9.5	63
Chung	31.9	38.5	16.7	8.1	4.8	1685

Source: The 2018 Survey by Institute for Family and Gender Studies; Note: Significant level: ***$P < 0.000$

Field survey data show that some ethnic groups have made significant changes when the proportion of wives in the name of bank loan procedures is equal to that of husbands (Muong, Tay, Thai, Ede, and Cham). Meanwhile, there are still many ethnic groups in which only husbands are named in the procedures for bank loans (Hmong, Dao, Kho mu, and Nung). This difference also shows the process of changing the status of women in different ethnic groups. Ethnic groups with a higher proportion of women in the name of procedures for bank loans have a lower poverty rate than ethnic minorities in the name of men applying for bank loans (see comparison in Tables 38.1 and 38.4). This result also shows that, when women have been proactively developing production plans and procedures for bank loans, their household economy has improved, and poverty has decreased.

Compared to the 2012 survey, most households borrowed money to buy rice to address the problem of food shortages (29.4%); by 2018, households borrowed money to invest in production, mainly to buy buffaloes, cows, pigs, and plant varieties to expand production.

The loan amount from ethnic minority women is more than VND 30 million with a common term of 12 months to 24 months. Particularly for some ethnic groups with high poverty rates such as Kho Mu and Hmong, the common loan amount is from VND 20 million to VND 30 million, mainly for investing in poultry and cattle raising. For ethnic groups such as Tay, Nung, Muong, and Thai, the loan amount is over VND 50 million to invest in industrial crops, animal husbandry, and aquaculture. Many poor and near-poor households borrowed money in large amount to invest in production (Fig. 38.4).

According to the regulation of the policy bank, the loan term is no more than 36 months, 0% interest rate with the principle of rotation in the community. Each community established many loan groups with 5–10 women; each woman borrowed no more than 30 million VND in turn with the supervision of loan use of the whole women group. The procedures for obtaining loans from the Women's Union are

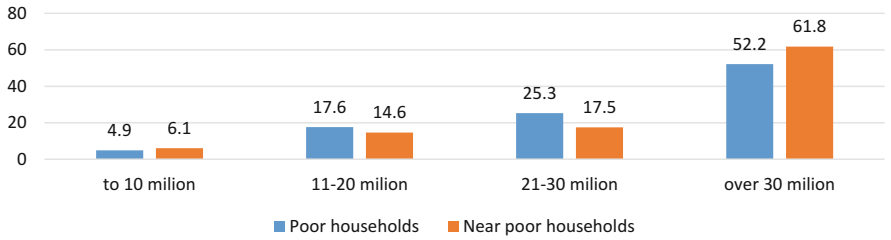

Fig. 38.4 Loan amount of poor and near-poor households. (Source: The 2018 Survey by Institute for Family and Gender Studies; Note: Significant level: ***$P < 0.000$)

unsecured, so it is very easy and convenient. There are even places that agree to borrow money in advance and then return it with agricultural products during the harvest season. With flexible form, the loan is guaranteed to be mobilized to the maximum, and there is no outstanding bad debt.

Thanks to the flexibility of the social policy bank and the mandatory regulations when making loan procedures which require the consent of both spouses in the family, with the supervision and support of the Women's Union at the Credit facilities and activities of ethnic minority women, remarkable results have been seen for household economic development. In case the loan is not used for the right purpose, the Women's Union can intervene and bind responsibilities of both husband and wife for the loan. Many households have made profitable investments, gradually eradicating poverty and developing commodity economy. The loan operation has gradually helped ethnic minority women to have more equal rights in their efforts to develop household economy.

3.3 The Position of Ethnic Minority Women in the Family Has Been Improved

According to the survey results for Hmong ethnic women, if in the past, the business activities of the household were decided by the man and the husband, then now, the women were more confident and had discussion with husband to make investment and production activities of the family (57.1%). Major spending activities in the family have also been discussed by both husband and wife (85.6%); there is no situation that the woman completely depends on her husband's decisions in family activities.

The results of the table above show that the punctuation of patriarchy and patriarchal regimes is very clear in people under both patriarchy and matriarchy. However, there have been significant changes when economic activities in the family have been discussed and agreed between husband and wife. The women, from a position that only knows to work, to fulfill the requirements of her husband, have been involved in discussions, opinions, and decision making on economic

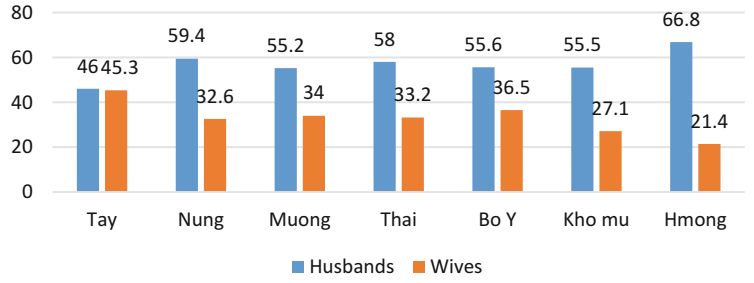

Fig. 38.5 Actual head in the household. (Source: The 2018 Survey by Institute for Family and Gender Studies; Note: Significant level: ***$P < 0.000$)

affairs of the family. Important decisions in the household's production and business activities were discussed by the couple and made a decision together. These changes have contributed significantly to empowering the ethnic minority women's position in the family (Fig. 38.5).

In some ethnic groups, the status of head of household has a relative parity between wives and husbands. In the analysis, both husbands and wives have the rights to make decisions in the family, meaning that the consensus between both husbands and wives in the family is very high. However, in some ethnic minorities, the wife's role is still much lower than that of the husband when the proportion of wives who are the true head of the family is only half that of the husband.

Consensus and equality status between husbands and wives are particularly important in borrowing and expanding production of households.

> If both husbands and wives have to agree, they can do business with ease. When intending to borrow a loan, the husband must discuss with his wife, and the wife must also ask for the opinion of her husband so that she can easily come back to do business with a loan. Unlike before, husbands often go out and go to meetings so they know more, men take the initiative to borrow money and come back to inform their wives only (In-depth interview, Hmong female, 37 years old, Ha Giang).

The results of this change have significantly changed perceptions and even family relationships toward greater equality and consensus, especially among ethnic groups with cultural characteristics of the patriarchy.

Household economy improved; women's life improved. Unpaid work such as collecting water, collecting firewood, and washing clothes for women was significantly reduced. Instead, women have more time to rest and spend more time and effort to develop livestock husbandry and child care; thanks to the development of household economy, domestic violence is also reduced.

> Since the loan for livestock development, the family has no longer worried about hunger or shortage of rice. My family has also bought water pumps and gas stoves for daily use. Now I just have to cut grass to raise cows, raise pigs and do housework. The couple also argued less. Children work as hired laborers, so they have money to spend in their families (In-depth interview, Female, Nung, 42 Years old, Lang Son).

The field survey in ethnic minorities in the Northern Uplands shows that, when women's decision-making power is improved, the family economy is gradually stabilized. Family capital concentrates more on production and business activities to create products. The role of money management in the family shifted from the man's only decision to unanimous discussion of both husband and wife. In Gia Cát commune, Cao Lộc district, and Lang Son province, many households borrowed credit for poverty reduction to grow vegetables, raise cows, and raise pigs. After 10 years of supporting production from the Women's Union's credit fund, hundreds of Tay and Nung households now have borrowed credit to grow clean vegetables, plant forests, and develop livestock. From a commune with 65% poor households, up to now the rate of poor households is only 12%. In 2015, Gia Cat commune had the highest credit amount in Cao Loc district with 16 billion dong; many households turned to business loans with the loan demand of 50 million to 100 million dong. Investment from bank loans has had clear results.

Many households, thanks to bank loans to develop production, have had enough to eat, have savings, and actively invested in production. In 2012, up to 40% of the whole commune was illiterate, unable to read and write. Through the bank loan support package, many women are determined to learn to eradicate illiteracy so as to proactively prepare loan documents and deal with bank officials. Training courses on raising and planting clean vegetables have been organized in the locality with the support of the Women's Union and commune authorities. By 2018, the rate of illiteracy among ethnic minority women was 5% for the elderly, who are no longer able to learn to read and write. This result clearly affirms that the effectiveness of credit borrowing in agricultural production of ethnic minorities is very positive and brings many benefits to ethnic minority women.

4 Conclusions and Discussion

Empowering the household economy through the preferential credit loan support package for women is an effective solution for ethnic minorities in Vietnam. Overcoming many cultural barriers, traditions, and customs which always attach importance to the role of men, women who are always weak in all family activities have become stronger, more confident, and more autonomy in production activities of the family. The family economy is enhanced, the women's life is improved, and the burden of unpaid work is significantly reduced, helping women be more supported in the housework.

Credit activities for household economic development also change the perception and attitudes of women about their position in the family and society. Shifting from shy, self-deprecating women who do not dare to communicate with people outside the community, illiterate, have no decision-making power in the family, up to now, ethnic minority women in the survey sites have shown ability, confirmed their position in the family and community.

However, there are significant differences between ethnic minorities. In some ethnic groups residing in highland and remote areas, the poverty rate is still very high, the percentage of households who borrow capital to invest in developing household economy is still very low, such as the Hmong, Dao, and Kho mu ethnic groups, and the status of the woman has not improved. Meanwhile, ethnic minorities living in the plains and valleys have favorable communication conditions, women have more opportunities to access loans to develop household economy, and their position has changed significantly. Women in ethnic minority areas in lowland areas have raised themselves in difficulties to ensure family life, and they also need to be empowered in the relationships of the family and the community.

The achievements of poverty reduction in ethnic minority areas in Vietnam have demonstrated the efforts of all levels of government and sociopolitical organizations, in which the Women's Union plays an important role. In addition to creating conditions for borrowing procedures, the Women's Union also makes an important contribution to helping members overcome family difficulties and gradually improve household production. More and more women participate in production and business activities of households, especially, the rights to participate in discussion and decision making in family activities is also significantly improved. Despite this, Vietnam still needs to integrate development assistance policies for women into socioeconomic development programs and policies to empower women, especially ethnic minority women.

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Chapter 39
Factors Affecting Financial Sustainability of People's Credit Fund in Vietnam's Mekong Delta Region

Van Duong Ha

Abstract Financial self-sustainability (FSS) is one of the sustainable development indicators of microfinance service providers. This index is an important goal that many financial institutions aim in their operations, including people's credit funds (PCFs). This study examined the factors that affected financial self-sustainability of PCFs and used data from 2013 to 2018 of 24 PCFs. The results show that capital adequacy ratio and income have positive impacts on FSS; at the same time, credit growth, nonperforming loan ratio, and economic growth have negative effects on FSS, while the inflation rate and deposit growth do not have impacts on FSS. This result is consistent with the operation characteristics and development history of PCFs in the Mekong delta region of Vietnam from 2013 to 2018. Through the findings, the study recommends the important contents to increase financial sustainability of PCFs in Vietnam's Mekong delta region. On the other hand, this study helps the PCFs' managers to identify this impact for better management of PCFs.

Keywords FSS · Financial self-sustainability · People's credit fund

1 Introduction

People's credit fund is one of the institutions that provides microfinance services. The operations of PCFs play important roles in widening financial inclusion and contribute to bridging the financial exclusion gap created by the traditional financial system. Specifically, the PCFs contributed to ensuring social security over the years from increasing the financial services for the poor, low-income people. Many PCFs in Vietnam expand the scale of the service provision and need to ensure the balance of the social, income, and financial sustainability goals. It is important for PCFs to increase the financial sustainability, and this has now become the important goal

V. D. Ha (✉)
Saigon Institute of Economics and Technology, Ho Chi Minh City, Vietnam

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along with expanding financial services, which are the top targets that PCFs strive to achieve in their operation strategies. However, many PCFs' financial sustainability in the Vietnam's Mekong delta region has fluctuated over the years, affecting many important goals in their operations. Until now, there have been some research studies on the PCF operations in Vietnam's Mekong delta region; however, there has been no research on factors affecting financial sustainability of PCFs. The study of factors affecting financial sustainability is a one of the urgent issues to find out factors that affect financial self-sustainability of PCFs in Vietnam's Mekong delta region. In this sense, this study will be very interesting to the PCF level decision makers and to the other stakeholders of PCFs in Vietnam's Mekong delta region.

In Vietnam, PCF is a credit institution that established and arose in response to serve communities. The PCFs provide some banking operations for the main purpose of mutual assistance through pooling members' savings together for on-lending to the same members. This is an important channel of capital mobilization, which has actively contributed to the development of agricultural and rural economy in Vietnam. Therefore, PCF is a legal entity that provides financial services, and their operations play important roles in widening financial inclusion and contribute to bridging the financial exclusion gap created by the traditional financial system. To play this important role, one of the requirements for PCFs is ensuring financial sustainability.

Sustainability is the goal of many sectors and fields in countries around the world; each country will rely on economic and social characteristics to plan the most suitable strategy for sustainable development. Sustainability means the ability of an ongoing activity to carry out services in pursuit of planned goals. For microfinance institution, this means the ability to continuously operate and it is a guarantee to be safe for the operations' microfinance institutions to consolidate their future (Delija & Qirici, 2015). Sustainability was an organization's ability to meet operational costs and create sufficient reserves for the operations (UNESCAP, 2006). A microfinance institution will have financial sustainability if their revenue was generated that covered the operating expenses, financing costs, loan loss provisions, and cost of capital (Ledgerwood, 1999). Therefore, financial sustainability in PCFs refers to the ability of institutions that cover all their expenses, loan loss provisions, and the capital cost from their operations.

The financial sustainability is measured to ensure that PCFs will develop in long term. The financial sustainability is related to all PCF activities and is affected by many factors, including the following:

First, capital adequacy ratio: Capital adequacy ratio reflects the available capital, and PCFs have sufficient level of capital required to ensure operational safety and provide financial sustainability. Capital adequacy ratio showed the health, operational safety, and sustainability of microfinance institutions since sufficient capital attracted lenders and depositors to have confidence in the microfinance institutions (Ledgerwood, 1999).

H1: There is a positive relationship between the capital adequacy ratio and the financial sustainability of PCFs.

Second, credit growth: The sustainability of microfinance goes along with commercial viability and institutional growth (Weber, 2013). According to MkNelly and Stack (1998), there was a significant relationship between credit growth, and the study results of Painter and MkNelly (1999) showed that loan growth is important to financial sustainability and had positive impacts. Tehulu (2013) found the loan intensity and size had a positive impact on the financial sustainability of microfinance institutions.

H2: There is a positive relationship between the credit growth and the financial sustainability of PCFs.

Third, deposit growth: Institutional sustainability was an important factor in the successful provision of financial services to microfinance clients, and financial sustainability was an indispensable requirement for institutional sustainability (Brau & Woller, 2004). Therefore, microfinance connectivity aimed to increase the outreach and microfinance sustainability through capital mobilization and lending. A sustainable microfinance institution that lent microfinance customers on a continuous basis provided microfinance services to its members through their resources and mobilized funds (UNESCAP, 2006). The goal of deposit mobilization is twofold: (1) to provide deposit services and (2) to improve financial sustainability (CGAP, 2005). On the other hand, savings mobilization had lower capital cost compared to other sources. For rural savings and credit cooperatives, mobilizing deposits ensured their financial sustainability (Duguma & Han, 2018).

H3: There is a positive relationship between the deposit growth and the financial sustainability of PCFs.

Fourth, income: Microfinance institutions achieve financial sustainability when their income exceeds the costs (Yaron, 1992). An analysis of profit-motivated microfinance institutions revealed that profit-motivated microfinance institutions have a higher rate of sustainability compared to nonprofit microfinance institutions (Amit & Kedar, 2014). People's credit fund is one of the institutions that provide microfinance services that are profit-motivated; thus, the income will affect their financial sustainability.

H4: There is a positive relationship between the income and the financial sustainability of PCFs.

Fifth, nonperforming loan ratio: Loan repayment could be another indicator for financial sustainability (Khandker et al., 1995), financial sustainability required financial institutions to maintain good financial status, and the financial institutions were not financial sustainability due to low repayment rate (Meyer, 2002). Financial sustainability is the key condition for operational self-sustainability; therefore, nonperforming loan ratio affecting financial sustainability will affect the operational self-sustainability of PCFs.

H5: There is a positive relationship between the nonperforming loan ratio and the financial sustainability of PCFs.

Sixth, economic growth: Sustainability was the ability of a program to maintain its financial capacity even if the financial assistance sources were cut off. Sustainability was the most researched analysis in microfinance development research. The results of many studies have revealed that economic growth might affect the

microfinance operation growth (Fernandez et al., 2018). The sustainability of microfinance institutions depended on macroeconomic characteristics. Identifying these links could help microfinance institutions to locate microfinance in the macroeconomy (Ahlin et al., 2011). Therefore, economic growth affects microfinance operations and the financial sustainability of microfinance institutions.

H6: There is a positive relationship between the economic growth and the financial sustainability of PCFs.

Seventh, inflation rate: The inflation rate was an indicator that controlled the impact of macroeconomics on financial sustainability. There was relationship between inflation rate and financial sustainability, and inflation negatively affected financial sustainability (Duguma & Han, 2018). At the same time, macroeconomic variable such as inflation was also found to have an effect on the microfinance institution self-sufficiency and inflation increased the cost of production, which had led to decrease in financial sustainability of the microfinance institutions (Lensinka et al., 2018).

H7: There is a negative relationship between the inflation rate and the financial sustainability of PCFs.

2 Methodology

Both the primary and secondary data are used in this study. International journals and books are secondary data sources. Primary data are collected from financial reports of 24 PCFs in Vietnam's Mekong delta region in the period of 2013–2018. This research has analyzed and synthesized the theoretical basis related to financial sustainability of PCFs. Based on the synthesized and analyzed theories, the paper defines the factors affecting financial sustainability, and the analysis model of the factors affecting financial sustainability of PCFs in Vietnam's Mekong delta region is established as follows:

$$Y = \beta_0 + \sum_{k=1}^{n} \beta_k X_k + \mu,$$

where Y is a financial sustainability variable that measures financial self–sustainability and X_k are the independent variables. The correlation coefficients of the independent and dependent variables are β_0 and β_k. Indicator i shows the number of observations, and indicator t shows the number observed year. It is on this basis that the following multiple regression model was used:

$$\begin{aligned}\mathrm{FSS} = {} & \beta 0 + \beta 1\,\mathrm{CAR} + \beta 2\,\mathrm{CGR} + \beta 3\,\mathrm{DGR} + \beta 4\,\mathrm{INC} + \beta 5\,\mathrm{NPL} + \beta 6\,\mathrm{GDP} \\ & + \beta 7\,\mathrm{INF} + \mu.\end{aligned}$$

Table 39.1 Summary of the research model variables

Variables and symbols	Definition	Expected sign and hypotheses
Dependent variable		
Financial self-sustainability (FSS)	Operating income/(operating expenses + financing costs + provision for loan losses + cost of capital)	
Independent variable		
Capital adequacy ratio (CAR)	Total capital/risk-weighted assets	H1: + (high CAR, high FSS)
Credit growth rate (CGR)	Growth in loan outstanding	H2: + (high CGR, high FSS)
Deposit growth rate (DGR)	Growth rate of customer deposits	H3: + (high DGR, high FSS)
Income (INC)	Operating income	H4: + (high INC, high FSS)
Nonperforming loan ratio (NPL)	Nonperforming loans/total loans	H5: − (low NPL, high FSS)
Gross domestic product (GDP)	Growth rate of gross domestic product	H6: + (high GDP, high FSS)
Inflation (INF)	Change of the consumer price index annually	H7: − (low INF, high FSS)

Stata 15.0 software was used in this study, and the definitions of variables and expected signs are presented in Table 39.1.

To evaluate the factors affecting financial sustainability, this study performed descriptive statistics, performed correlation analysis of variables in the model, and performed regression analysis according to the fixed-effects model (FEM) and random-effects model (REM). The study made a comparison between FEM and REM to select the appropriate model. The selected model was compared with pooled ordinary least squares (OLS) model, and the result of the selected model was the result used to identify the factors affecting the financial sustainability of PCFs.

3 Results

3.1 Descriptive Statistics and Correlation Analysis

The study carried out descriptive statistics as shown in Table 39.2. The results testify that variables FSS, CAR, NPL, GDP, and INF have standard deviations less than the average. The variables CGR, DGR, and INC have many changes over the years, due to differences in size and growth rate of income, deposit growth rate, and credit growth rate between PCFs in Mekong Delta region of Vietnam in the period from 2013 to 2018.

Table 39.2 Descriptive statistics

Variable	Obs	Mean	Std. dev.	Min	Max
FSS	144	110.6	8.160111	68.4606	137.667
CAR	144	18.04	6.779657	8.02	41.15
CGR	144	0.0669514	0.1466846	−0.214	1.087
DGR	144	0.0687174	0.1798071	−0.37	1.022
INC	144	204.5032	239.9829	−90.17	1054.21
NPL	144	1.201736	1.189866	0	6.34
GDP	144	6.363333	0.5607787	5.42	7.08
INF	144	3.508333	1.781145	0.63	6.6

Source: Own calculations

Table 39.3 Correlation matrix

	FSS	CAR	CGR	DGR	INC	NPL	GDP	INF
FSS	1.0000							
CAR	0.2274	1.0000						
CGR	−0.2266	−0.1833	1.0000					
DGR	−0.0158	−0.0822	0.5501	1.0000				
INC	0.2835	−0.1182	−0.1636	−0.0619	1.0000			
NPL	−0.4160	0.0204	0.0506	0.0467	−0.1268	1.0000		
GDP	−0.1789	0.1185	−0.1967	−0.4153	−0.0854	−0.0028	1.0000	
INF	0.0323	−0.0948	0.1691	0.2693	−0.0260	−0.0524	−0.6534	1.0000

Source: Own calculation

The analysis results showed that there was no the presence of any multicollinearity because the correlation level of variables was low in this model (Table 39.3).

3.2 Regression Results

Regression in the study is carried out using FEM, REM, and pooled OLS model between FSS-dependent variable and CAR, CGR, DGR, INC, NPL, GDP, and INF independent variables.

The estimated results of FEM and REM showed that values of *P*-value of both models were less than the significance level of 5% (*P*-value = 0.000), so there existed statistical significance at 5% in both models. In both FEM and REM, the CAR and INC variables were positively related to the FSS at 1% and 5%, the NPL and CGR variables were negatively related to the FSS at 1% and 10%, and the DGR variable had a positive relationship to the FSS variable, but this variable was not statistically significant. In REM, the GDP variable had a negative impact on FSS at the 5% significance level, the INF variable was negatively related to the FSS

Table 39.4 Regression results for factors affecting financial sustainability

Independent variables	Dependent variable (FSS)	
	REM	FEM
CAR	0.303*** (3.58)	0.307*** (3.72)
CGR	−10.72* (−2.29)	−10.64* (−2.34)
DGR	2.538 (0.63)	3.412 (0.83)
INC	0.00702** (2.90)	0.00711** (3.01)
NPL	−2.713*** (−5.75)	−2.715*** (−5.87)
GDP	−4.283** (−3.04)	0 (.)
INF	−0.614 (−1.47)	0 (.)
_cons	136.9***	107.4***
P-value	0.0000	0.0000
N	144	144

*t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$*
Source: Own calculations

Table 39.5 Collinearity diagnostics

Variable	VIF	SQRT VIF	Tolerance	*R*-squared
FSS	1.59	1.26	0.6286	0.3714
CAR	1.17	1.08	0.8551	0.1449
CGR	1.59	1.26	0.6294	0.3706
DGR	1.68	1.30	0.5942	0.4058
INC	1.16	1.08	0.8608	0.1392
NPL	1.27	1.13	0.7844	0.2156
GDP	2.16	1.47	0.4624	0.5376
INF	1.81	1.35	0.5513	0.4487
Mean VIF	1.56			

Source: Own calculations

variable, but this variable was not statistically significant. Variables GDP and INF have no effect on FSS in the FEM as shown in Table 39.4.

The Hausman test was carried out to select the appropriate model in the FEM and REM. The Hausman test results showed that *P*-value reached 0.9924; this value was greater than 5%, so REM was the selected model. The study compared REM with OLS pooled model; REM was the selected model to identify the factors affecting financial sustainability. After multicollinearity test, the result showed the average value of VIF was 1.56; VIF of all variables FSS, CAR, CGR, DGR, INC, NPL, and INF was less than 2, and VIF of GDP was less than 3 as shown in Table 39.5. The result showed no multicollinearity phenomenon in this model.

The study examined the variance change of the model, and the results showed that the *P*-value reached 1000; this result was greater than 0.05, so this model had no phenomenon of variance change. The test result of autocorrelation showed that the *P*-value reached 0.5338; this result was greater than 0.05, so this model had no serial correlation.

Through the regression results, the model study of the factors affecting the financial sustainability of PCFs is as follows:

$$\text{FSS} = 136.9 + 0.303 * \text{CAR} - 10.72 * \text{CGR} + 0.00702 * \text{INC} - 2.713 * \text{NPL} - 4.283 * \text{GDP}.$$

The results of REM in Table 39.4 reflected that variable CAR had a positive influence on FSS with a coefficient of 0.303 and variable CAR had a positive impact on the FSS with the significance level of 1%; this result showed variable CAR had a very strong impact on the FSS. This result agreed with the expected sign and hypotheses and agreed with the analysis results of Ledgerwood (1999). In recent years, the PCFs in the Mekong delta region of Vietnam have always maintained a capital adequacy ratio of over 8% to meet the requirements of the operational development. Therefore, a high capital adequacy ratio will contribute positively to improving the financial sustainability of PCFs in the Mekong delta region of Vietnam.

The variable CGR had a negative impact on the FSS with a coefficient of −10.72, and CGR variable had a negative impact on the FSS with the significance level of 10%; this result showed variable CGR had a significant influence on the FSS. This result disagreed with the expected sign and hypotheses and disagreed with the analysis results of Painter and MkNelly (1999), Weber (2013), and Tehulu (2013). Many PCFs increased the credit size to create income, but the extra income was not commensurate with the increasing expenses in the past few years. There was a negative relationship between credit growth and financial sustainability of PCFs in the Mekong delta region of Vietnam.

The variable INC had a positive impact on the FSS with a coefficient of 0.00702, and variable INC had a positive impact on the FSS with the significance level of 5%; this result showed that INC had a strong impact on the FSS. This result agreed with the expected sign and hypotheses and agreed with the analysis results of Yaron (1992) and Amit and Kedar (2014). There are 23 out of 24 PCFs that ensure operating income annually. This is a favorable condition that promoted the stable activities of PCFs developed in the recent period. Therefore, income is one of the factors promoting high financial sustainability of PCFs in the Mekong delta region of Vietnam.

The variable NPL had a negative impact on the FSS with a coefficient of −2.713, and the NPL variable had a negative impact on the FSS with the significance level of 1%; this result showed variable NPL had a very strong impact on the FSS. This result agreed with the expected sign and hypotheses and agreed with the analysis results of Khandker et al. (1995), and Meyer (2002). Most of the PCFs have a low

nonperforming loan rate, which helps PCFs to ensure their operations were safety in the past few years. Therefore, the increase in nonperforming loan ratio will be the risk in financial sustainability of PCFs in the Mekong delta region of Vietnam.

The variable GDP had a negative impact on the FSS with a coefficient of −4.283, and variable had a negatively impact on the FSS with the significance level of 5%; this result showed variable GDP had a strong impact on FSS. This result disagreed with the expected sign and hypotheses and disagreed with the analysis results of Fernandez et al. (2018) and Ahlin et al. (2011). This relationship is explained by the low competitiveness of PCFs in the Mekong delta region of Vietnam. As the economy grows, people's incomes become higher and capital demand and banking services also increase. Meanwhile, PCFs do not have enough financial and human resources to develop their services. The products and services of PCFs are not diversified, mainly loans in period 2013–2018.

This research result was consistent with the operation and development process of PCF in the Mekong delta region of Vietnam from 2013 to 2018. Every year, most of the PCFs step by step improve capital adequacy ratio by supplementing charter capital and increasing income during operation. PCFs improve nonperforming loan ratio concerned by many PCFs, and most of the PCFs have low nonperforming loan ratio. On the other hand, this study does not find a statistically significant impact between variables DGR and INF. This is consistent with the fact that PCFs mainly use the external mobilized funds to provide financial services and loans under the conditions of low equity and low inflation rates in Vietnam in the past few years.

4 Conclusions and Discussion

The objective of the study is to explore the factors affecting the financial sustainability of PCFs in the Mekong delta region of Vietnam. This study has conducted multiple regression analysis to identify potential factors affecting the financial sustainability of PCFs. Based on previous research studies, seven prominent factors were identified. The results of the study show that five factors, including capital adequacy ratio, credit growth, income, loan-to-deposit ratio, and economic growth, significantly influence the financial sustainability of PCFs. Deposit growth and inflation rate have an insignificant relationship with the financial sustainability of PCFs. Two factors that have positive relations with the financial sustainability of PCFs are capital adequacy ratio and income. Three factors that have negative relations with the financial sustainability of PCFs are credit growth, nonperforming loan ratio, and economic growth. Deposit growth and inflation rate have negative relationships with the operational self-sustainability of PCFs. The factors that have the highest impact on financial sustainability are capital adequacy ratio, income, and nonperforming loan ratio, and the control of nonperforming loans has contributed to the financial sustainability of PCFs in the Mekong delta region of Vietnam.

Nowadays, PCFs are an area of considerable interest and investment in many regions of the country. The operations of PCFs play important roles in widening

financial inclusion and contribute to bridging the financial exclusion gap created by the traditional financial system. Specifically, the PCFs contributed to ensuring social security over the years from increase in the financial services for the poor, low-income people. Through the findings, the study recommends the important contents to increase financial sustainability of PCFs in Vietnam's Mekong delta region. On the other hand, this study helps the PCFs' managers to identify this impact for better management of PCFs.

First, PCFs are credit institutions that provide capital mobilization services to lend to their members. Therefore, to ensure operation self-sustainability, PCFs must follow the general principle of ensuring safety for banking operations.

Second, strengthening financial capacity by increasing charter capital, attracting new members. PCFs focus on lending to its members; therefore, strict control over credit growth quality and efficiency is necessary to ensure financial sustainability of PCFs.

Third, on the basis of strengthening financial and human resources, PCFs need to diversify activities to take advantage of the conditions of economic growth in Vietnam and increase financial sustainability.

Fourth, PCFs need to increase resources to ensure the operational goals, and the operations of PCFs ensure to comply with the cooperative principles in order to enhance mutual support and cooperation among members. At the same time, PCFs ought to strengthen credit risk management measures to increase their financial sustainability.

The study result explores the factors affecting the financial sustainability of PCFs in the Mekong delta region of Vietnam. Subsequent research studies can be extended to PCFs in Vietnam to explore further other factors affecting the financial sustainability of the cooperative credit sector in Vietnam.

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Chapter 40
In Search of Solutions for the Governance of the Rights of Migrant Workers in Southeast Asia: Regulatory Regionalism as a Reasonable Approach

Thuy Duong Nguyen

Abstract The issue of migrant workers' rights has been a difficult challenge for ASEAN to address. Many commentators pointed out the inadequacies of ASEAN's governance on this issue such as the lack of legally binding regional instruments, which are compatible with international labor standards, the absence of an enforcement mechanism, and the poor protection of migrant laborers' rights in its member states. These shortcomings are the consequences of the "ASEAN way" approach, which is based on the principles of sovereignty, noninterference on internal affairs, and consensus on decision-making, combined with the incompatibility in national interests among different member states. However, it is unrealistic to expect that ASEAN would change these norms, which are meant to guarantee the respect of member states' sovereignty in order to improve the situation of migrant workers within the region. Hence, this paper focuses on the concept of regulatory regionalism as a possible solution for ASEAN to deal with this issue. Although it might be a long and challenging process, this innovative approach allows ASEAN to not only play the more central role but also ease member states' concerns regarding their sovereignty. Accordingly, it would promote and protect the rights of migrant workers within the region in a truly comprehensive and integrated manner.

Keywords Migrant worker rights · Regulatory regionalism · Migrant workers in Southeast Asia

T. D. Nguyen (✉)
Hanoi Law University, Hanoi, Vietnam
e-mail: duongnt@hlu.edu.vn

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1 Introduction

It is estimated that the number of migrant workers originated from Southeast Asia is 20.2 million, while there are approximately 6.9 million of intra-ASEAN migrant workers. There are two main intraregional flows of migrants among ASEAN member countries. The first one is within the Mekong subregional areas including the migrant labors from Myanmar, Cambodia, Lao PDR, and Vietnam to Thailand. The other ones come from Indonesia and Philippines, heading to countries such as Brunei Darussalam, Malaysia, and Singapore (Allison-Reumann, 2017). Apparently, with respect to intraregional migrant labors, ASEAN member states could be divided into two groups, namely, sending countries and receiving countries, which means it is almost impossible to harmonize the conflict of interests between them on the issue of migrant workers between them (Allison-Reumann, 2017).

Given that most of the Asian migrant workers are temporary and unskilled, they would usually be classified as undocumented and hence remain more vulnerable than other skilled and professional laborers. However, the laws of member countries, including home and host alkie, do not provide adequate protection for migrant workers (Brown, 2016). In the countries of destination, migrant workers often endure severe discrimination. For instance, Singapore does not have a provision for migrant workers under its labor law. Similarly, Malaysia does not mention medical care for migrants, and their children are also not allowed to enroll in public schools (Ramji-Nogales, 2017). In their home countries, the insufficiency of legal mechanism and institutional capacity to protect migrant workers forces them to rely on private bookers rather than national official recruitment process (Farbenblum & Justine, 2017; Kneebone, 2012). Many of those workers end up being irregular migrant workers or even falling victims to human trafficking. Consequently, they would stand a lower chance of being protected under the protection mechanism in the host states. In other words, responsibilities over migrant workers are continuously unsettled between home and host countries.

Researchers concur that regional integration process has driven countries into homogeneous situation, which is called “regional boats” that require regional decisions and actions (Chavez, 2015; Farbenblum & Justine, 2017). In addition, scholars also agreed that there are shared responsibilities among host and home countries in protecting the rights of migrant workers (Farbenblum & Justine, 2017; Kneebone, 2012).

ASEAN is the first regional organization to show efforts to protect and promote the rights of migrant workers, since it is the origin of the largest number of migrant workers in Asia. Migration issue was acknowledged for the first time in 1999 in ASEAN. Nevertheless, it seems that the association has not done enough to properly address this issue. It is notable that ASEAN member countries tend to consider migrant workers as a national security issue. This approach is also reflected in ASEAN documents on cooperation to resolve the issue of migrant workers’ rights. It is possible that right-based approach is unlikely to be accepted seriously when it comes to migrant worker issues at both national and regional levels. As a result,

migrant workers within ASEAN countries are frequently exposed to high risk of being abused, working under the insufficient conditions, having health problems, or even being treated as criminals in the host states day by day.

This paper aims to analyze ASEAN's efforts as a regional international organization in developing a governance mechanism to protect the rights of migrant workers. Simultaneously, it describes the limitations of the protection of the rights of migrant laborers and reasons for the obstructions ASEAN frequently faces in building a model for managing this issue in accordance with regional countries. This paper also suggests a relevant solution to this regional convoluted issue. Among the manifold solutions, regulatory regionalism is likely to prevail.

2 Methodology

This paper considers migrant workers' rights as a regional issue, which requires mutual cooperation of all ASEAN members to search for a reasonable solution. Hence, this paper does not focus on migrant worker issues in sending or receiving countries at the national level. The scope of this research paper goes beyond the boundary of national territories. Thus, it is impossible for the author to use research methods such as interview or observation, which requires abilities of getting access to stakeholders who are directly related to migrant workers issues (e.g., the brokers, the recruitment agencies, the migrant workers and their families, or policy-making actors at both national and regional levels). Therefore, the author mainly uses the documentary analysis as an inexpensive and effective method to carry out this research. This paper uses desk research based on the theory of regulatory regionalism. Also, this paper considers the issue of migrant workers' rights within Southeast Asia countries as a case study to explain the situation of migrant workers' rights.

3 Results

3.1 ASEAN's Efforts in Addressing Migrant Workers' Rights Issues

Although regional agreements and initiatives play a determining role in the governance of the rights of migrant workers in ASEAN, they have not gained comprehensive results as expected by the association.

In 1997, ASEAN started to implement activities in cooperation with respect to migrant workers issues. ASEAN has come up with some notable innovations to solve migrant labor problems as illustrated below.

– The ASEAN Declaration on Transnational Crime 1997 aimed to commit to fight against the illegal immigration and human trafficking.

- The ASEAN Vision 2020 (1997) aimed to motivate the establishment of regulations and cooperating actions for transitional issues, such as trafficking in women and children.
- The Hanoi Action Plan (1998) aimed to elaborate the detailed schedules to execute the ASEAN Vision 2020 of an integrated ASEAN community and to commit to the fundamental cooperation in the fight against the trafficking of women and children.
- The Bangkok Declaration on illegal immigration 1999 was signed by ASEAN members and other parties including Australia, Bangladesh, China, Japan, Republic of Korea, New Zealand, Papua New Guinea, Sri Lanka, and Hong Kong special administrative region to take the pledge to solve the immigration problems, especially illegal immigration in a thorough and balanced way, and to strictly follow every step to fight against human trafficking in ASEAN area.
- The ASEAN Declaration Against Trafficking in Persons Particularly Women and Children 2014 aimed to commit to build a head connection against human trafficking in Southeast Asia.

In all these initiatives, programs do not directly intend to the migrant worker issues in the regional scale. Their focus is the issues of human trafficking or protecting vulnerable groups like woman and children, while the whole picture of migrant workers' problem is still off the table.

In 2004, the Vientiane Action Program was the first reaction of the association toward the migrant workers' rights issues. This document aims to undertake ASEAN members to construct a regional framework instrument to protect and promote the rights of migrant workers within the region. In order to implement the commitments reached in Vientiane Action Program 2004, the declaration on the promotion and protection of human rights of migrant workers adopted in 2007 (referred to as the Cebu Declaration) has confirmed the necessity to adopt a comprehensive policy at regional level and determine the principles and measure specifically aiming at protecting and promoting the rights of migrant workers in ASEAN. The declaration emphasizes the contributions of migrant workers in the home and the host ASEAN member states. This document stipulates the necessity of establishing a comprehensive policy concerning migrant workers. The Cebu Declaration is considered as a momentous achievement as ASEAN gives a general statement to protect and promote the rights of migrant workers for the first time.

The Cebu Declaration sets out the core principles for the protection and promotion of the rights of migrant workers for ASEAN member countries. Accordingly, member countries will need to cooperate closely with each other and promote the value and potential of migrant workers in an environment of freedom, justice, and stability in accordance with the national law and policies. Furthermore, the Cebu Declaration stipulates obligations of sending and receiving countries alike in the protection of migrant workers within Southeast Asian countries. To specify, the host countries have responsibilities to put efforts to protect fundamental rights of migrant workers through a variety of aspects, including providing sufficient information and training; supporting migrant workers to get access to decent working and adequate

living conditions; preventing discrimination in payment of wages, such as equality in payment of wages; and ensuring them access to justice and remedies (from Article 5 to Article 10). Article 11 to Article 14 of the Cebu Declaration stipulate the obligations of sending countries, expressing that it is essential to make it possible for migrant workers to have more opportunities to seek jobs at their country as a sustainable solution. Moreover, sending countries need to implement national policies to facilitate various steps in the progress of migration of laborers.

The Cebu Declaration reflects initial steps of the association, which show commitments of ASEAN members regarding migrant workers' rights. This document also sets provisions on monitoring progress in implementing these activities and requests the ASEAN General Secretariat to submit an annual report on the implementation of the Cebu Declaration on the ASEAN Summit through the ASEAN Foreign Ministers' Meeting (from Article 15 to Article 22 of the Declaration). However, one of the biggest drawbacks of this document is that it is politically binding instead legally binding (Ramji-Nogales, 2017). Hence, Article 22 in the Cebu Declaration imposes obligations for ASEAN members to "develop an ASEAN instrument" on protecting migrant laborers' rights as a first step to lay the foundation for future developments of an effective mechanism in protecting migrant workers' rights in ASEAN. It is likely that ASEAN would start at loose or even nonlegal binding frameworks, often for a political purpose, and then gradually upgrade them to formal instruments that have stronger binding effect.

After the Cebu Declaration was signed in 2007, ASEAN has taken specific actions to bring the commitments in the declaration into reality, which was the trigger for some future progresses of the association in the governance of the migrant workers' rights issue.

First, ASEAN has taken the first steps to implement the declaration by establishing ASEAN Committee on the Implementation of the ASEAN Declaration on the Protection and Promotion of the Rights of Migrant Workers (ACMW). In 2008, the ACMW was established in order to develop a regional legally binding instrument concerning migrant laborers. This institution has the responsibility to ensure that the commitments in the declaration will be implemented.

Second, ASEAN has established a group of experts to support the implementation of activities aimed at promoting and protecting the rights of migrant workers in the region—the Task Force on ASEAN Migrant Workers (TF-AMW). The task force is a mechanism to ensure the rights of migrant workers through civil society organizations of the region and ASEAN member countries, trade unions, human rights organizations and institutions, and NGOs on immigration. This initiative consists of SAPA regional networks and trade unions, including a wide range of civil society organizations and national working groups in ASEAN member states. The task force aims at enhancing the progress of drafting the ASEAN framework instruments concerning this issue.

Third, ASEAN established the ASEAN Forum on Migrant Workers (AFML) in order to provide opportunities for various stakeholders (including the governments of the ASEAN member countries, organizations of workers, employers, and civil society organizations) to exchange views and share experiences in the regional

meetings. Each forum focuses on a theme and usually relates to the problem of how to implement the ASEAN Declaration on the rights of migrant workers. Each meeting has its own review session to give detailed assessment on the Articles of the Cebu Declaration in terms of obligations of sending and receiving countries. Furthermore, the forum adopts recommendations after each thematic session concerning migrant workers' rights issues.

Eventually, after a long time of negotiation, ASEAN reached a final agreement by signing the Consensus on the Protection and Promotion of the Rights of Migrant Workers at the 31st ASEAN Summit on November 14, 2017 (referred to as the Consensus). Although it took ASEAN a decade to adopt the Consensus, this document is morally binding rather than legally binding as intended in the Cebu Declaration (Rother, 2018). The Consensus that is considered brings a step forward of ASEAN in the protection of the rights of migrant workers in the region. Although the document creates nonbinding principles, it also increases and expands the important obligations of ASEAN member states. After the Consensus was signed, ASEAN members also decided to adopt the Action Plan (2018–2015) to implement the Consensus, which is developed by the ACMW.

It is also necessary to refer to the adoption of the ASEAN Declaration on Human Rights in 2012 (ADHR). Although the ADHR is also a nonlegally binding agreement, this document shows the stronger commitments in addressing the migrant workers' rights issues. Article 4 of the ADHR expresses that the rights of migrant "are an inalienable, integral and indivisible part for human rights and fundamental freedoms." It is an important evidence of the commitments of ASEAN member states in the protection of the rights of migrant workers.

In general, ASEAN has a tendency to use "soft law" tools in the governance of migrant worker issues. Most of the regional documents regarding migrant workers are nonlegally binding (Ramji-Nogales, 2017).

3.2 The Inadequacies of ASEAN Governance Regime Concerning Migrant Workers' Rights

Although ASEAN made an attempt to establish a governance regime on the issues of migrant workers' rights within its member states, such a regime still suffers from limitations and deadlocks. Notwithstanding the strong language expressed in its nonbinding agreements, ASEAN is still struggling with the issues of migrant labor rights.

First, provisions of ASEAN nonbinding agreements are relatively vague, which diminishes the effectiveness of the regional mechanisms regarding the protection of migrant workers' rights. On the one hand, ASEAN documents show the imbalance between sending and receiving member states, which is commented by Kneebone (2011) that it reflects the status of "weak" and "strong" states in the ASEAN countries' relationship with respect to migrant worker concerns. For example,

Article 13 of the Cebu Declaration imposes the responsibilities of protecting migrant workers not only in the progress of recruitment and preparation for overseas deployment but also for their actual overseas deployment, as well as repatriation and reintegration to the home country. However, the Article does not mention any corresponding obligations of the host states. Kneebone (2012) claimed that despite the fact that both sending and receiving countries gain benefits from migrant workers, these two partners do not share the same level of responsibilities in protecting these workers.

Second, when it comes to migrant workers, ASEAN pays more attention to the security aspects than to human rights ones. This is also a traditional approach of countries that consider migrant workers as an issue, which has negative impacts on national security. Therefore, the issues related to the rights of migrant workers have not received proper attention at regional agendas in Southeast Asia. Instead, ASEAN member states concentrate on the negative aspects of migrants to national security, for example, illegal immigration, human trafficking, and smuggling (Cheah, 2009; Kneebone, 2011), which subsequently affects regional cooperation activities.

An example of this approach is the situation of undocumented migrant workers, which accounts for a large percentage of all migrant workers within the region. They are more vulnerable to be exposed to abuse, working under insufficient conditions, suffering from illness without primary health care, or even being treated as criminals in the host states. However, ASEAN seems to be silent on the protection of undocumented migrant workers in its regional instruments. To specify, ASEAN has raised its attention for irregular migrants since 1999 with the adoption of the Bangkok Declaration on irregular migration. This document prescribes that "regular and irregular migration should not be considered in isolation from each other." Nevertheless, the next documents of the Association state otherwise. Both the Cebu Declaration and the Consensus stipulate that undocumented migrant workers' rights are only considered when it comes to "humanitarian reasons" (Article 2 of the Declaration and Article 56 of the Consensus). Furthermore, clauses 49 and 59 also show that ASEAN still focuses on preventing the influx of irregular immigrants rather than protecting their rights when they have been already worked in the host states. Perhaps this humanitarian approach excludes responsibilities of governments in protecting undocumented migrant workers' rights, which evidently originated from some ASEAN receiving countries. For instance, Cheah criticized that the humanitarian approach is emphasized in Singapore, which could allow member states consider the rights of undocumented migrant workers from the lens of the lack of kindness in the society. Therefore, it is simple that the government and elitism class in Singapore only need to protect undocumented migrant workers' rights as a way to show their kindness rather than the activity of taking social responsibility.

Third, it is apparent that initial attempts to build formal normative frameworks for the association have been failing. As noted above, the Cebu Declaration aimed at enhancing the progress of adopting a regional instrument, which has legally binding effect on the protection and promotion of migrant workers' rights. Clearly, there has been the deadlock of the association in reaching the consensus between member

states on the common approach of migrant workers issues. One of the main reasons for the delay in signing a legally binding instrument regarding the rights of migrant workers is the contradicting interests between sending and receiving member countries. These conflicts, as explained by Chavez (2015), come from the priority of ASEAN member states to sovereignty, which was expressed by the ASEAN principles of noninterference and consensus on decision-making (Kneebone, 2012; Auethavornpipat, 2017). In the progress of drafting the regional framework instrument, there are three points that revealed major conflicts between ASEAN members. The first one is the degree of binding of the document. The second one is the undocumented migrant workers issue, and the final one concerns about the protection of family members of migrant workers (Allison-Reumann, 2017; Bal & Gerard, 2018; Rother & Piper, 2015). This is also evident in the case of Malaysia, which requires full sovereignty in the migrant policies (Ramji-Nogales, 2017).

3.3 Regulatory Regionalism as an Appropriate Solution for the Governance of Migrant Workers' Rights Issues in Southeast Asia

3.3.1 The Concept of Regulatory Regionalism

This part will examine the emergence of regulatory regionalism as an efficient way to tackle transboundary issue in Asia in general and the case of Southeast Asia in particular.

The concept of "regulatory regionalism" was initially developed by Jayasuriya (2009). The author uses the term "regulatory regionalism" in reference to a new mode of regional governance, which takes root in possibilities of reshaping economic and political borders between countries in the context of globalization. The emergence of globalization has contributed to developing cross-border interactions among different actors in various countries, which created the so-called political and ideological boundaries. This new border system was created under complex transnational economic and political relations among countries, leading to many transboundary issues that need to be controlled. In order to minimize these new transboundary risks effectively, it is necessary to build new spaces of governance (Jayasuriya, 2015). From this lens, Jayasuriya and Hameiri (2011) pointed out that these new spaces have been created as regional regulatory frameworks and networks in terms of convoluted transnational social, economic, and security issues through soft law and informal mechanism rather than official international and regional agreements or institutions.

It is noted that this approach of regulatory regionalism is clearly distinct from the theory of nationalism. Unlike nationalism methodology, regulatory regionalism does not express state sovereignty within the national territory in regional integrations. Scholarly opinions seem to reach a consensus on the disadvantages of the nationalism approach in international and regional integration (Jayasuriya, 2009). To

effectively address transboundary issues, concerned nations need to have a cross-border governance system through the engagement with international or regional institutions. However, from the lens of nationalism approach, the fact that some functions of states are able to be replaced by the establishment of such institutions could be viewed as the limitation of state power in internal affairs (Jayasuriya, 2009). As a result, countries are not willing to engage in regional integration to address cross-border problems, especially in "sensitive" issues, which are closely related to national sovereignty such as money laundering, migration, and terrorist. In contrast, regulatory regionalism is not based on the idea that the cooperation of intergovernmental organizations or the establishment of regional institutions potentially replaces national sovereignty of its member countries, which creates opportunities for conservative countries to seek for more effective governance forms to resolve transboundary issues.

Jayasuriya also concluded that regulatory regionalism is a new mode of regional governance, which emphasizes the actual activities of local or national institutions of member states rather than relying on formal regional cooperation mechanism or official international agreements (Jayasuriya & Hameiri, 2011). In other words, it is an internal transformation process of states when they enable the implementation of regional projects at the national and even local level (Chattranond, 2018). A radical example is when China actively participated in a regulatory regionalism project—The Greater Mekong Subregion (GMS) in the Economic Cooperation Program of the Asian Development Bank. This project reflects the engagement of local authorities of Yunnan and Guangxia provinces in the National Coordination Group for the GMS Program, which was established by the Chinese government in 2006. This institution was the combination of central government and local authorities including Ministry of Trade, Ministry of Finance, Ministry of Foreign Affairs, General Department of Customs, and local authorities of Yunnan and Guangxi (Jayasuriya, 2015).

3.3.2 The Emergence of Regulatory Regionalism Governance in Asia-Pacific

As mentioned above, compared with other regions, ASEAN shows a weak regionalization (Fernández-i-Marín & Jordana, 2015) due to member states' persistence on absolute national sovereignty of country members, which results in an generally conservative view on innovative governance modes (Ravenhill, 2009; Fernández-i-Marín & Jordana, 2015). However, Asia witnessed a broad spectrum of new governing forms—regulatory regionalism governance, starting at financial surveillance sectors, and then expanding to a variety of other issues such as water management (Jayasuriya & Hameiri, 2011).

There are several main reasons for the emergence of a new regulatory form of regional in the highly conservative Asian countries when it comes to regional integration.

First, the emergence of regulatory regionalism in Asia is a predictable inevitability, which attributes to the economic and political impacts of the globalization on national governance of many countries in Asia. This alternative governance form is not a political choice of parties in a state (Jayasuriya, 2009), but this responds to the strong demands for an effective governance system, which is capable of resolving cross-border issues rising in the context of globalizations.

Globalizations with the development of transnational productivity networks have facilitated continuous flows of capital across international borders in various regions including Asia, creating changes in regional economical governance form. On the one hand, transnationalization of markets in the region allows countries to access economic resources and enables them to achieve economic development instantaneously. On the other hand, cross-border trade and investment flows create new problems within the states such as financial crises, climate changes, environmental degradations, infectious diseases, migrant, human trafficking, and laundry crimes. In this context, it is difficult to ensure the stability of the markets and address these transboundary issues without a regional governance regime including evolving countries. However, it is likely that states demonstrate their central roles in policy making and the market management to serve public interests. Thus, it leads to conflicts between requirements for effective governance and the demand of keeping the power of national states regarding transboundary issues. Chattranond (2018) gave example of the overlapping systems of different countries along the Mekong rivers to manage the hydropower market efficiently in this region. Chattranond (2018) also argued that regulatory projects have appeared as a tool to help states ensure the stability of transnational hydropower market in the Mekong subregion without concerning over the transfer of power for a regional institution.

Second, scholars also suggest that new-generation FTAs, which have been recently signed, reflect a new approach in establishing transnational governance systems (Jayasuriya, 2009). Such FTAs like RCEP or TPP (and now CPTPP) indicate that, apart from stipulating traditional provisions related to trade arrangements among countries, these agreements also set the rules and principles for dealing with social issues in country members such as environmental protections, food safety, and labor standards in national policies. This approach creates new political relations and compels governments to participate in political and social regulatory projects, which brings more reactions and communications among member states' national agencies. In other words, Jayasuriya (2015) suggested that new-generation FTAs are the forefront of developing a new mode of regional governance.

As mentioned above, Jayasuriya (2009) stresses the importance of active participation of national agencies in the implementation of regulations over international treaties and formal regional cooperation. Unlike Jayasuriya, Fernández-i-Marín and Jordana (2015) argue that when participating on international and regional initiatives, member states' national agencies can communicate, learn experiences, and exchange views from each other. These interactions gradually form an internal transformation at the level of national agencies and later in the whole governance system of these countries. In other words, it is likely that the emergence regulatory

regional governance has its roots in the actual interrelations among national agencies of different states.

Third, scholars also pointed out that due to inflexibility and structural rigidity of the prevailing regional governance systems in Southeast Asia, a new form of regulatory regional governance has a chance to appear. Indeed, there are various issues arising from globalizations in the region, which give rise to a quest for a new form of regional governance to address transnational issues promptly. However, Southeast Asia countries lack flexible governance structures, which are capable of adapting to continuous changes in the context of globalization. Various scholars indicated that it has been a long and slow process of cooperation of risk managements through formal regional organizations in Asia countries, for example, APEC and ASEAN (Narine, 2004). This limitation could be attributed to the common concerns of states in the region about the possibility of losing power if they enter into regional and international agreements. The idea of transferring power to international and regional institutions prevents states from being eager to participate in such a regional governance mechanism. These doubts and hesitations create an internal contradiction of nation states in the process of addressing the transboundary risk issues (Chattranond, 2018). On the one hand, governments understand that it is impossible to efficiently manage the crisis coming from transnational issues without the cooperation among nations. This is particularly true for the case of developing countries that lack institutional capacities. On the other hand, states always want to demonstrate their central role in all aspects of governance within the boundary of their nations.

Therefore, countries in the region need a "softer" form of regional governance, do not pose a threat to their sovereignty, and ensure the central role of national authorities, but at the same time allow a certain degree of cooperation to regulate transboundary issues effectively (Jayasuriya, 2015). As a result, in Asia, in general, and Southeast Asia, in particular, regulatory regionalism has been emerged to meet the demands for a new and flexible governance mode in the region.

To conclude, it is evident that the emergence of regulatory regionalism in the region is an inevitable result of a long and complex progress of economic and political interactions and communications among nations in the context of globalization.

3.3.3 Regulatory Regionalism as a Reasonable Solution for Migrant Workers' Rights Issue in ASEAN

As explained earlier, ASEAN member nations have been influenced by the traditional understanding of regional integration, which underpinned the need for the transfer of power to regional institutions. It is evident that political elites in ASEAN member countries have tendency to fight against the invasion of regional institutions to the power of the state. Such tendency leads to the deadlock during the establishments of systematic regional mechanisms to deal with a wide range of transnational issues. This is partly attributable to the colonial history of the region, which has an

adverse effect on member states, pushing them to prevent the intervention from external powers. Almost all countries in Southeast Asia have undergone a long and arduous struggle for national independence and self-determination to escape from Western domination. In fact, the establishment of ASEAN aimed at maintaining and promoting the independence of member countries (Narine, 2004). Hence, it seems to be impossible for them to accept the idea of "transfer of sovereignty" in regional integration activities, especially in "sensitive" transnational issues such as migrant workers' rights. This is certainly true in the case of migrant workers' rights issues in ASEAN as discussed above.

Moreover, one of the most criticisms regarding ASEAN's governance of migrant workers issues is the lack of legally binding agreements and an effective implementation mechanism. However, it seems that migrant workers' policies of international community nowadays have changed, supporting the approach that promotes the use of informal and nonbinding instruments as guidance and recommendations for countries alongside international standards and norms in legal documents (Allison-Reumann, 2017; Cheah, 2009; Rother & Piper, 2015). In favor of this view, Xinying (2008) suggests that the governance model, which not seriously focuses on legally binding agreements, is compatible with the general trend of international community.

One of the main reasons why it took ASEAN so long for signing legal binding instruments regarding migrant workers' rights is the conflict of interests between sending and receiving countries in the region. These apparent conflicts, combined with the consensus principle of ASEAN, have prevented negotiation processes from reaching a consensus on a legally binding agreement in terms of the protection of the rights of migrant laborers. This problem could have been solved if we could think beyond the traditional approach that pushes ASEAN members to place the region above the state interests and fully participate in the regional process by signing stronger binding instruments or establishing more regional monitoring mechanisms. Instead, ASEAN members would only need to encourage constructive engagements of various actors including ministries, civil society groups, and private stakeholders with transboundary interactions, which play a vital role in the development of regional regulatory projects at national level (Allison-Reumann, 2017).

These new regulatory projects are the inevitable result, which meets the demands of countries to seek appropriate solutions for transboundary risks under the impacts of globalizations. In the case of Southeast Asia, some elementary forms of regulatory regionalism have been emerging. A good example of this could be found in the situation of the Asian economic crisis. The negative impacts of the crisis to ASEAN revealed the incapacities of ASEAN in dealing with regional economic issues, and more severely, ASEAN could not be reformed to adapt to it (Narine, 2004). As a result, miscellaneous initiatives were raised to devise the alternative solutions that would be more efficient in addressing similar problems in the future. Narine (2004) mentions the establishment of the ASEAN Surveillance Process (ASP) in 1998 as an informal monitoring mechanism, which gives member countries more tools to cooperate more closely and improve fundamental transparency in the national financial governance systems to deal with economic crises without any rule or

regulation. Narine (2004) also argues that due to the deadlock of ASEAN in changing its noninterference principle, numerous monitoring and exchange information models have been created, for example, the Asian Monetary Fund, the ASEAN Plus Three cooperation, and the Chiang Mai Initiative (CMI) (Narine, 2004). Although ASEAN members are probably unwilling to participate in legally binding agreements or to establish a regional monitoring mechanism, which may limit the authorities of national agencies, these abovementioned initiatives reflect the fact that ASEAN has tried to improve regional governance in different ways, with nonlegal binding instruments that give states more opportunities to collaborate, exchange views, and learn experiences from each other.

In addition, regarding the rights of migrant workers, it is pointed out that international norms and standards are not in accordance with local norms and value systems at national level. Thus, informal and flexible forms of regulatory regionalism have made it possible for local stakeholders including migrant workers themselves, to raise their voices and to take part in the progress of solving migrant workers' rights issues in the region (Ramji-Nogales, 2017). On the other hand, state power at remote areas, particularly at border ones, would be faded. Thus, it would be more efficient to put more focus on the intermediary communications at local level of these areas to regulate migrant workers issues (Rungmanee, 2016). Regulatory governance projects may give ASEAN a good opportunity to enhance the collaboration between local agencies, particularly at remote areas, which are the focal points of migrant workers' corridors in Southeast Asia.

Furthermore, the model of regulatory regionalism is also appropriate for developing countries, which possess insufficient resources and lack institutional capacities in dealing with complicated transnational issues. As noted by Chattranond (2018), regulatory regionalism supports active involvements of private actors in governance system, which mitigates the burden on the states' resources. Chattranond (2018) mentions the situation of hydropower markets in the Mekong basin, which build transnational relationships between the consumers, the producers, and the concerned states in a governance agreement on the basis of sharing common norms rather than developing a "rule-based" region. In addition, he claimed that countries in Southeast Asia have tendency to share their transnational development functions with other private actors in dealing with transnational issues and to exercise their authorities in domestic policies. In other words, regulatory regionalism even emerges as a mean to strengthen the role of national governments in running the countries. Cheah (2009) also supported for the multistakeholder approach that requires the collaboration between a wide range of actors to tackle national problems. Farbenblum and Justine (2017) suggested that there is no single actor that could take the responsibilities of protecting the rights of migrant workers. Such responsibilities belong to various actors including state and nonstate actors such as NGOs, businesses, activists, and migrant workers also.

Overall, there is possibility that these kinds of regulatory projects could also be a reasonable approach to address migrant workers' rights issue in Southeast Asia, through the focus on informal regional agreements and initiatives rather than on formal one.

4 Conclusions

ASEAN has made great efforts in managing the rights of migrant workers in the region. Notwithstanding such efforts, the approach that promotes the signing of legally binding principles and establishes monitoring enforcement frameworks for ASEAN regarding the protection of the rights of migrant workers is arduous due to the "sensitive sovereignty" issue within the region. Therefore, the solutions that eliminate gradually the principles under the "ASEAN way" could not be executed immediately. Besides, right-based approach solutions are not effective for this issue as member countries are heavily influenced by the approach of national security concerning migrant workers. Therefore, it is necessary to establish innovative, flexible, and localized solutions for ASEAN to manage the rights of migrant workers in the region.

Regulatory regionalism might be a pertinent approach for Southeast Asia at the moment for a few reasons. First, the establishment of regulatory governance project does not raise ASEAN member's concern for "transfer of sovereignty" in regional integration. This would give rise to ASEAN countries' willingness to implement regulatory project at national level regularly. Second, regulatory regionalism places the importance on actual participation of national agencies, particularly local authorities, especially in border areas. Moreover, this approach is also consistent with the cross-border characteristics. Finally, regulatory regionalism seizes multistakeholder approach, which is proper in developing countries in Southeast Asia. In regulatory regionalism project, notwithstanding the diverse combination of different entities, the state always plays a fundamental role.

The emergence of regulatory regionalism in the Asia-Pacific region, in general, and in Southeast Asia, in particular, is not the political choice of member states' representatives, but an evitable result, which manifests transformations of states before the effects of globalizations when formal processes are decelerated and unproductive. The question here is that, after defining the indispensability of regulatory regionalism, how will ASEAN determine their roles toward member states and the region? Will ASEAN continue to play a center role or step aside and become the guidance or intermediary who situates member states, including a wide range of stakeholders at national level in the center of regional and national governance system? Further studies should pay attention to the effects of regulatory regionalism on the protection of the rights of migrant workers' rights alongside other transnational issues and the role of ASEAN in this new model of regional governance.

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Chapter 41
Toward Responsible Tourism in Vietnam: Critical Review and Implications for Future Research

Phuong Mai Nguyen, Nam D. Vo, Quang Long To, and Van Toan Dinh

Abstract Since the passage of Law on Tourism in 2005 and its amendment in 2017, Vietnam has increasingly invested in the tourism sector as a spearhead industry of the economy to turn Vietnam into a destination for the mass tourist. Along with tourism development, the negative impacts of tourism activities on the environment and society have been acknowledged to a certain extent. In such a context, sustainable tourism, ethical tourism, and responsible tourism have been discussed. However, there is a lack of previous research on how the responsible tourism concept is adapted to the situation of the Vietnam tourism industry. This paper presents the background of the Vietnamese tourism industry. Moreover, based on the survey results with 122 individuals and 20 tourism experts, this paper highlights prominent actions to promote responsible tourism in Vietnam. The implications for further research on the topic are also proposed.

Keywords Corporate social responsibility · Responsible tourism · Sustainable development

P. M. Nguyen (✉)
International School, Vietnam National University, Hanoi, Vietnam
e-mail: mainp@vnu.edu.vn

N. D. Vo
University of Danang, Da Nang, Vietnam

Q. L. To
VNU University of Social Sciences and Humanities, Vietnam National University, Hanoi, Vietnam

V. T. Dinh
University of Economics and Business, Vietnam National University, Hanoi, Vietnam
e-mail: dinhvantoan@vnu.edu.vn

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1 Introduction

Tourism is one of the leading service businesses in the world. In an annual quantitative analysis of the employment impacts and global economic of Travel and Tourism in 185 countries and 25 regions, the investigation of the World Travel and Tourism Council (WTTC) shows that in 2018, the sector valued for 10.4% of global GDP and 319 million jobs (10% of total employment). The distribution of overall spend is strongly weighted toward the leisure market. This kind of market represented 78.5% of the whole compared with 21.5% for business spend, and the sector estimated 6.5% of total global exports and 27.2% of total global service exports. Domestic tourism represented 71.2% of all tourism spending in 2018 and had the most robust growth in developing countries, which proceeds to promote opportunities by spreading development and regional economic benefits and building national pride. In 2018, in comparison with regions, Asia-Pacific endured an energetic performer, growing by 6.4%.

One of the most rapid growth economic sectors on the globe is travel and tourism. It plays a significant role in the development of emerging objectives. Regarding WTTC, the industry employs close to 100 million positions, representing some 3% of total employment in the world. It pays to support travel and tourism. According to the leading industry group, the Destination Marketing Association International (DMAI), each $1 spent in target marketing generates $38 in visitor spending across international markets.

In Vietnam, this sector contribution takes account for 6% of GDP, producing more than 2.5 million direct jobs and designing an income of 612,000 billion VND in 2018. According to the WTTC Report (2018), during the period from 2011 to 2017, Vietnam ranks number 21 among the top 30 highest performance countries in Travel and Tourism sector of the world in terms of the absolute growth for four indicators: total Travel & Tourism GDP, foreign visitor spending (visitor exports), domestic spending, and Travel & Tourism capital investment. Besides the positive impact of the Travel and Tourism sector on economic growth, the development of the sector also significantly influences the natural and social environments. Tourism activities are claimed to break the balance of the ecosystem in destinations if they are not adequately controlled (Budeanu, 2005). Facing the challenges for sustainable development, the debate on corporate social responsibility (CSR) in tourism in general and responsible tourism, in particular, has been continuing for several decades in both academia and business society. However, few studies in Vietnam clarify the actions that need to be taken to promote responsible tourism and measure their impacts on society. Thus, this paper aims to present a critical review of the current situation of the Vietnamese travel and tourism sector and propose a list of actions to promote responsible tourism and implications for further research on the topic.

This paper is constructed as follows: Section 1 mentions the relevance of the study. The conceptual background of the topic with the primary focus on the "responsible tourism" concept is presented in Sect. 2. Section 3 follows the

methodology of the study. In Sect. 4, there is a discussion on the survey results on responsible tourism actions in Vietnam. Finally, implications for further research and conclusion are discussed in Sect. 5.

2 Conceptual Background

2.1 Responsible Tourism

We look at the full debate and notions of sustainable development and sustainable tourism development from which responsible tourism has emerged to understand why responsible tourism has been posited as an antidote to the negative impacts of tourism. Although the concept of conservation per se is not new (Hall, 1999), the new perception of environmental issues can be traced to 1972 and the first United Nations summit to consider the issues of the impact of humanity on the world. The summit placed the conservation of the environment into the attention of public awareness. This problem remained on the political agenda throughout the 1970s, gathering momentum during the 1980s (McMichael, 2003). This increased interest was manifested in the Brundtland Report, where the term sustainable development entered widespread use. The report defines sustainable development as "the development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. Sustainable development aims and seeks to find a stable theoretical framework for decision making in any situation where a person/environment relation can be found, whether environmental, economic, or social" (WCED, 1987). Since the 1980s, the global community has staged the 1992 UN Conference on Environment and Development in Rio, which produced Agenda 21, a global, national, and local action plan for sustainable development, and, more recently, the 1997 Kyoto Protocol, a global agreement to reduce carbon emissions.

Regarding the World Tourism Organization (1998), sustainable tourism development (STD) is to develop that not only meets the demands of present tourists and host regions but also protects and enhances the opportunities for the future. It will lead to manage all resources in the way that economic, social, and esthetic needs can be fulfilled while preserving cultural integrity, essential ecological processes, biological diversity, and life support systems. STD implies the need to secure the sustainability of tourism's primary resources at the destination level and is a way of obtaining a balance between the growth potential of tourism and the conservation needs of the resource base (Clarke, 1997; Lane, 1994).

In addition to the STD concept, corporate social responsibility (CSR) has become a buzzword in mainstream tourism. CSR is defined as not only for fulfilling legal obligations but also the idea is that a company must answer to social and environmental challenges voluntarily. CSR means different travel companies have to do different things: some engage in raising the cultural awareness of tourists, others introduce labor standards for employees, and yet others set up not-for-profit

foundations or social projects for children, families, or others of the population. It contains the set of concepts that travel companies embrace to make tourism sustainable and fit for the future (Mathew & Sreejesh, 2017).

The concept of responsible tourism has been emerging in recent decades in response to the increasing pressures from stakeholders in the society for CSR fulfillment. This thought, similar to the other emerging concept of sustainable tourism (Krippendorf, 1987), became common topics for academia (Jucan & Jucan, 2010; Clarke, 1997). Other equivalent terms have been used in the past to describe responsible tourism. Similar impressions included alternative tourism, green tourism, soft, sustainable tourism, small-scale tourism, or appropriate tourism (Lee & Cho, 2019; Krippendorf, 1982). Notably, since the Brundtland Report of 1987 proposed that intergenerational equality would not be achieved unless the impacts of economic activity on the environment were managed; the debate and research on responsible tourism have burst.

South Africa's Tourism White Paper (1996) refers specifically to the concept of "Responsible Tourism," the decisive elements of which are defined in the following terms:

- Developing, managing, and marketing tourism in ways that create competitive advantage.
- Assessing and monitoring the environmental, social, and economic impacts of tourism developments and openly disclosing information.
- Ensuring the active involvement of communities that benefit from tourism, including their participation in planning and decision-making and the establishment of meaningful economic linkages.
- Maintaining and encouraging natural, economic, social, and cultural diversity.
- Avoiding waste and overconsumption and promoting the sustainable use of local resources.

A more recent and prescribed description was developed at the Cape Town Conference in 2002. Based on the Cape Town Declaration, responsible tourism minimizes negative and maximizes positive impacts on social, cultural, environmental, and economic contexts; includes local people and heightens communities; provides to conservation; affords access for physically challenged people; and engenders respect and connections between hosts and guests (Goodwin & Francis, 2003).

In other words, responsible tourism is about providing better holiday experiences for guests and excellent business opportunities for tourism enterprises. It is also about enabling local communities to enjoy a better quality of life through increased socioeconomic benefits and improved natural resource management (Table 41.1).

The development of tourism causes many concerns within the domains of economic, cultural, social, and environmental policy domains. Economic sustainability has become more important than the others, but the social, cultural, and environmental issues do not go away. Tourism is gradually reliant on cultural, natural, social, and ecological resources, and the quality of resources of the destination. Tourism does affect, and is affected by the environment (Theobald, 2012).

Table 41.1 Socioeconomic impacts of tourism on local communities

Positive effects	Negative effects
Stimulate the local economy	Engender social tensions linked to wage and income disparities, between hosts and investors, and within the community itself
Create opportunities for direct and indirect employment	Increase pressure on infrastructure and services, especially in cases of mass or high-density tourism
Create opportunities for entrepreneurial activity	Drive-up land prices and housing/living costs, which can lead to the displacement of residents
Stimulate local business growth directly and indirectly	Create limited, seasonal, unskilled, and/or menial employment opportunities that lack access to training
Generate investment in social and economic infrastructure (e.g., schools, clinics, and roads)	Exacerbate gender inequalities as women tend to perform the most menial employment tasks and receive the lowest wages
Increase tax revenues	Stimulate inflows of job-seekers (regional immigration), which can increase unemployment and engender social tensions
Improve public services and amenities (e.g., transport, shopping, and entertainment)	Create high-regional leakage (the percentage of tourist expenditure that leaves the local economy)
Improve the quality of police protection	Encourage dominance by multinational companies or local power brokers' who appropriate all or most of the benefits from tourism operations
Improve living standards	De-emphasize "traditional" values and practices (e.g., through inflows of tourists, cash, and commodities)
Stimulate skills development	
Diversify livelihoods	

Source: Spenceley (2012)

Tourism, being a resource-dependent industry, needs to pay more attention to the concerns of every stakeholder group and deal with them fairly. Nevertheless, as it has already been discussed, each stakeholder group might approach STD from a different perspective and have different goals, which is a challenge for STD. When each associate has a different intention for sustainable tourism, consensus building becomes a challenging process (Lane, 1994).

2.2 Tourism Sector in Vietnam

In the past 10 years, the Vietnamese tourism industry has achieved high growth rates, with the number of international visitors increasing by an average of nearly 9% per year (Vietnamese Government, 2011). In 2013, Vietnam tourism welcomed

more than 7.5 million international visitors and served 32.5 million domestic tourists, reaching the total revenue from tourists of 200 trillion VND. Domestic tourism also proliferated, contributing to maintaining market stability. Vietnam tourism industry has gradually formed its brand and positioned itself in the world market.

In 2015, the tourism industry created 1.4 million direct jobs and a significant number of indirect jobs, contributing to approximately 15% of the national workforce. By 2020, it is projected that Vietnam will receive from 10 to 10.5 million international visitor arrivals (7.6% annual increase) and 48 million domestic tourists (5.3% annual increase). The tourism revenues will be expected to increase up to US $18–19 billion (13.8% increase up to 2015 and 12 annual per cent increase after that).

Following the developing trends, some areas in Vietnam such as Ha Long Bay, the Mekong Delta, have been the fastest-growing world destinations for a few years. However, tourism management and safety guarantee for tourists fail to meet the requirements. The phenomenon of aggressively seducing tourists in big cities is still prevalent. Tourism facilities such as information centers, rest stop points, and toilets are still underdeveloped and fail to meet the necessary quality standards. Eventually, some places in Vietnam have become the mass tourism destinations where tourists come and have been destroying the natural areas such as beaches, landscapes, and cultural heritages, which make tourism become under threat (Tan, 2014). Furthermore, the increasing inflows of both foreign and inbound tourists also lead to the rise of demand for prostitution and create fertile conditions for the expansion of the sex industry servicing both the local and lately, international markets (Agrusa & Prideaux, 2002). This is the negative impact of tourism development on the country.

In short, the development of the tourism industry in Vietnam has both positive and negative impacts on society. Responsible tourism models should then play their role in releasing the negative impacts on the economy, society, and environment and bring the most benefits for the local communities (Tan, 2014).

3 Methodology

3.1 Measurement

The measurement instruments of this study were adopted from the literature on responsible tourism and ecotourism (Agrusa & Prideaux, 2002; Argandoña, 2010; Stem et al., 2003). The impact of tourism on a destination is measured by four scales, including Economic Impact (6 items), Social Impact (4 items), Cultural Impact (4 items), and Environmental Impact (4 items). For each questionnaire item to measure tourism impact, respondents were asked to show their viewpoint on a five-point Likert scale, from 1 = “strongly disagree” to 5 = “strongly agree.”

Besides, respondents in this study were also asked two questions, including “Who should be involved in promoting responsible tourism?” and “Which actions should

be taken to promote responsible tourism?" A list of nine stakeholders of responsible tourism were developed.

For responsible tourism promotion, we use 35 actions that are classified into four groups corresponding to the actors who are travel agents and tour operators (11 actions), destination marketing organizations (DMOs) (8 actions), related service providers (5 actions), and tourists (11 actions). Respondents were asked to express their viewpoint on the necessity of these actions, using the Likert five-point scale (from 1 = totally not necessary to 5 = totally necessary).

3.2 Sampling and Data Collection

The research sample consisted of two groups, including experts in tourism who are working in the industry and tourists. The snowball and convenient sampling methods were applied. An online survey questionnaire was collected on Facebook groups and forums of travelers. Moreover, the questionnaire was also sent to some travel agents and university to get the responses from tourism experts. After 2 months, 142 individuals responded to the survey, including 20 tourism experts and 122 tourists. The responses were valid and accepted for analysis.

The research team committed that all responses were kept confidential to guarantee the objectitiviy of data. Respondents were not requested to provide their name, phone number, and email in the questionnaire. The authors also comply with the ethics in research by declaring not to provide the demographic information of respondents to any other parties. The survey data were only used for research purpose of this study. We anonymized all data for further analysis steps.

4 Results and Discussion

4.1 Sample Characteristics

A self-administered structured questionnaire survey was conducted using a convenience sampling method. The age of potential respondents is over 18 years. One hundred forty-two questionnaires were returned and thoroughly answered. In Table 41.2, the major respondents were male (71.8%) and the distribution of age is quite even. According to educational level, most of the respondents earned their university degree (66.2%) or higher (24.6% for master's degree and 7.7% for doctor degree). Besides, the majority of respondents have monthly income under six million VND, but they travel at least once per 6 months. It is also interesting to recognize that over 80% of the respondents were familiar with the concept of entertainment tourism. Only a few of them have ever heard about the emerging types of tourism, such as religious tourism, education tourism, or culinary tourism.

Table 41.2 The demographic profile of respondents ($n = 142$)

No.	Demographic variable	Frequency	Percent (%)
1	*Gender*		
	Male	102	71.8
	Female	40	28.2
2	*Age, years*		
	From 18 to 25	40	28.2
	From 26 to 35	39	27.5
	From 36 to 45	56	39.4
	From 46 to 55	4	2.8
	Over 56	3	2.1
3	*Educational level*		
	Under high school	0	0
	High school	2	1.4
	Bachelor degree	94	66.2
	Master degree	35	24.6
	Doctor degree	11	7.7
4	*Monthly income*		
	Below three million VND	62	43.7
	From 3 to six million VND	43	30.3
	From 6 to nine million VND	14	9.9
	From 9 to 12 million VND	23	16.2
	Over 12 million VND	0	0
5	*The frequency of traveling*		
	Never	0	0
	Less than one time per year	30	21.1
	Once per 6 months	58	40.8
	Once per 3 months	38	26.8
	Once per month	16	11.3
6	*Types of tourism*		
	Entertainment tourism	114	80.3
	Business tourism	7	4.9
	Visiting friends and relatives tourism	8	5.6
	Medical tourism	4	2.8
	Religious tourism	3	2.1
	Culinary tourism	4	2.8
	Education tourism	2	1.4
	Voluntary tourism	0	0
7	*Heard about responsible tourism concept*		
	No	44	31.0
	Yes	98	69.0

Source: Authors' survey

4.2 Measurement Reliability Test

The collected data were processed in SPSS version 20.0 to test the validity and reliability of scale using a Cronbach Alpha analysis. As demonstrated in Table 41.3, all constructs have Cronbach's alpha values higher than the cutoff value of 0.5, reflecting the moderate internal consistency of the measurement scale. Only variable X11 was removed from the scale of Cultural Impact because it had the intertotal correlation value lower than the cutoff value of 0.3.

4.3 Viewpoints on Impacts of Tourism

Respondents were asked about the impacts of tourism on a destination regarding four aspects (i.e., economic, social, cultural, and environmental). Table 41.4 shows the mean value of each item from the viewpoints of the expert group and tourist group.

As shown in Table 41.4, the expert group and the tourist group share similar viewpoints on most of the questioned items. The mean values of items are not very different when we compare the results calculated based on the responses of experts and tourists.

Among the six items of Economic Impact factor (EcI), "Create employment opportunities for local people" (X1) was rated the highest by both the experts (4.30) and the tourists (4.48). Meanwhile, the lowest-rated item is "Lead to the dependence on a certain industry" (X4) with the mean value of 3.25 and 3.00 for the expert group and tourist group, respectively. Regarding the Social Impact factor (SI), "Increase the opportunities to commercialize traditional products" was considered to be the most important by both expert and tourist groups. In the scale of Cultural Impact (CI), the issue of cultural exchange between local people and tourists is considered the most important item with mean values of 3.90 and 3.84 for the expert

Table 41.3 Reliability of Scales

Code	Description of variable	Cronbach Alpha	Number of items before the EFA test	Number of items after the EFA test
EcI	Economic impact	0.777	6	6
SI	Social impact	0.813	4	4
CI	Cultural impact	0.586	4	3
EnI	Environmental impact	0.893	4	4
A	Actions of travel agents and tour operators	0.935	11	11
B	Actions of DMOs	0.934	8	8
C	Actions of related services providers	0.872	5	5
D	Actions of tourists	0.769	11	11

Source: Authors' survey

Table 41.4 Impact of Tourism on the Destination

No.	Statement	Mean value	
		Expert ($n1 = 20$)	Tourist ($n2 = 122$)
	Economic impact (ECI)		
X1	Create employment opportunities for local people	4.30	4.48
X2	Earn revenue from tourists for local businesses and government	4.20	4.34
X3	Raise the living standard at the destination	4.10	4.07
X4	Lead to the dependence on a particular industry*	3.25	3.00
X5	Raise real estate price and living cost*	3.85	3.89
X6	Generate seasonal labors with low skills*	3.40	3.32
	Social impact (SI)		
X7	Diversify the creational activities at the destination	4.00	4.14
X8	Contribute to the maintenance of roads and other infrastructure	3.95	4.15
X9	Create more opportunities for local people to join some entertainment activities	4.00	3.86
X10	Increase the opportunities to commercialize traditional products	4.25	4.20
	Cultural impact (CI)		
X12	Bring valuable experiences for local people when exchanging cultures with tourists	3.90	3.84
X13	Indirectly lead to social crimes that negatively affect the local culture (prostitution and theft)*	3.50	3.42
X14	De-emphasize traditional culture values due to the control of monetary value*	3.10	3.18
	Environmental impact (ENI)		
X15	Disorder the life of nature animals because of tours and curious tourists in national parks	3.55	3.68
X16	Release a considerable volume of rubbish in the local destination	3.90	4.05
X17	Damage the ecosystem of the destination	3.65	3.60
X18	Destroy the nature of the destination	3.50	3.39

Source: Authors' survey
Note: Item with "*" is the the reverse item in the questionnaire

group and tourist group, respectively. Besides, among four items of the Environment Impact (EnI) scale, experts and tourists agreed that the valuable experiences for local people when exchanging cultures with tourists were the essential item.

Finally, the issue of rubbish in the local destination is considered the most influential on the destination. This negative factor should be recognized and addressed by multiple stakeholders at the destination.

4.4 Stakeholders to Promote Responsible Tourism

In this study, we identify that many stakeholders are involved in promoting responsible tourism in Vietnam. Respondents were asked to choose who should be

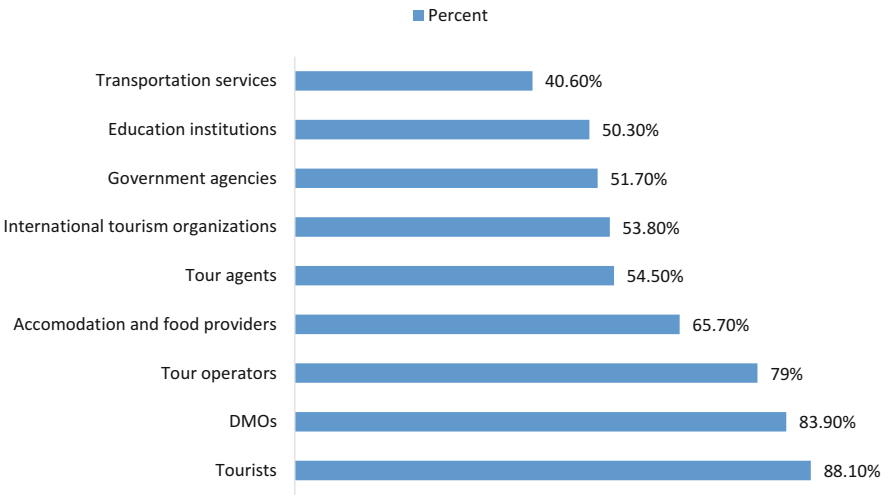


Fig. 41.1 Stakeholders to Promote Responsible Tourism (Source: Authors' survey)

involved in responsible tourism. The results showed that tourists are considered to be the most crucial stakeholder to promote responsible tourism (88.1%), followed by DMOs (83.9%) and tour operators (79%). It is also noteworthy that most stakeholders in the list, excluding transportation services, are considered to be valuable by more than half of the respondents (Fig. 41.1).

4.5 Possible Actions to Promote Responsible Tourism in Vietnam

In order to identify the possible actions to promote responsible tourism in Vietnam, the survey included one part in asking the experts and tourists how they evaluate the necessity of various actions.

Regarding the possible actions taken by the travel agents and tour operators, the expert group and the tourist group share their similar viewpoints. For all actions (A1 to A11), the mean value rated by two groups was almost the same. It is also noteworthy that all mean values were higher than 3.5 points, but none was higher than 4.7 points. In other words, both the expert group and the tourist group consider the actions taken by travel agents and tour operators to be moderate necessary.

Notably, according to the tourist group, the most critical action should be "Encourage tourists to protect the environment of host destinations" (A4 = 4.61). However, from the viewpoint of experts, the two most important actions are "Encourage tourists to protect the environment of host destinations" (A4 = 4.30) and "Raise the cultural awareness of tourists" (A6 = 4.30). Figure 41.2 proposes the details.

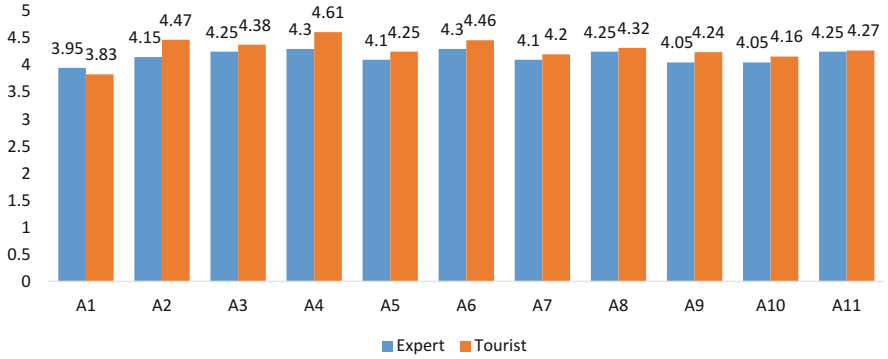


Fig. 41.2 Actions by Travel agents & Tour Operators to Promote Responsible Tourism. (Source: Authors' survey)

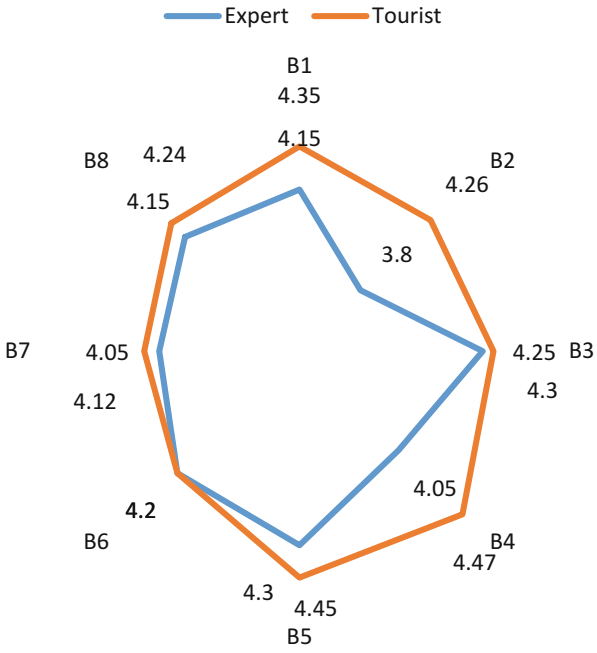


Fig. 41.3 Action by DMOs to promote Responsible Tourism (Source: Authors' survey)

Figure 41.3 shows the differences in the list of actions taken by DMOs to promote responsible tourism ranked by the expert group versus the tourist group. For all actions from B1 to B8, the tourist group gave higher scores, while the expert group seemed to have more careful judgment than the tourists did. The most important action that the experts chose was "Put in place measures to raise awareness among tourists and local communities regarding safeguarding the environment" (B5). However, from the viewpoint of the tourists, the action of "sustainably manage and protect marine and coastal habitats at destination sites " (B4) was taken.

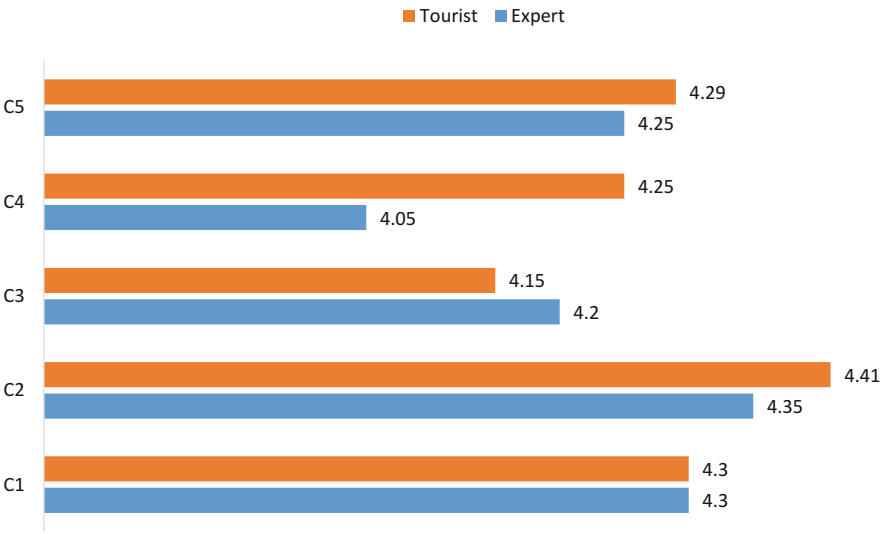


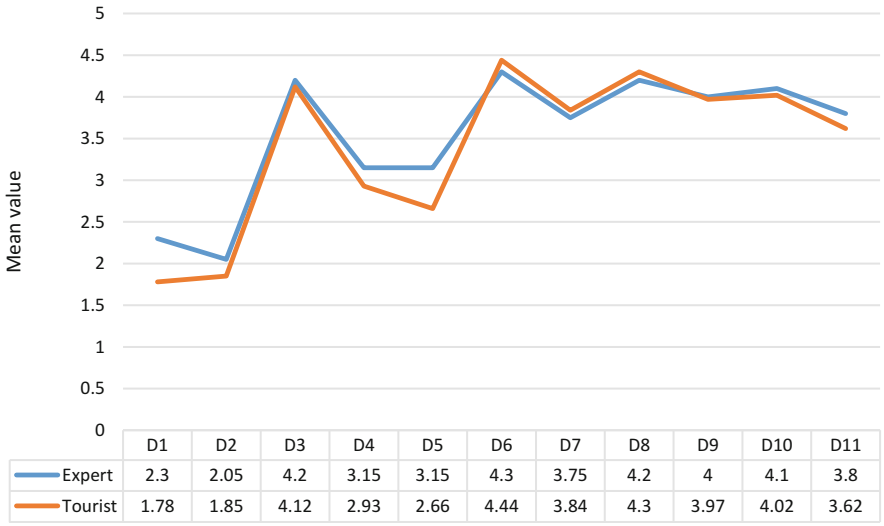
Fig. 41.4 Actions by related service providers to promote Responsible Tourism (Source: Authors' survey)

Furthermore, related service providers also play an important role in promoting responsible tourism through five actions, including sustainable water management (C1), energy-saving (C2), facilities investment (C3), preventing environmental risks (C4), and transparency in behaviors of company members (C5). Survey results show that tourists gave higher scores than the experts for most of the items, except for facilities investment (C3). Among the five actions, energy-saving (C2) was the most important, then sustainable water management (C1) ranked number 2. Figure 41.4 shows the details of the importance of these actions by the related service providers.

Finally, tourists are also considered the key player in responsible tourism. Among the 11 suggested actions by the tourists, three most important actions are "Conserving water at the destination" (4.30 and 4.44), "Experiencing the culture at the destination" (4.20 and 4.30), and "Insisting that tour operators provide transparent information about the environmental and social background of their products" (4.20 and 4.12) (Fig. 41.5).

5 Conclusions

This paper analyzed the issue of responsible tourism in Vietnam from the perspectives of tourism experts and tourists. Besides, the authors also pointed out the level of responsibility of the parties involved in responsible tourism. Survey results showed that tourists should play a key role in promoting responsible tourism in Vietnam. Since tourism is a complex industry that needs to be subject to comprehensive policy



	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11
Expert	2.3	2.05	4.2	3.15	3.15	4.3	3.75	4.2	4	4.1	3.8
Tourist	1.78	1.85	4.12	2.93	2.66	4.44	3.84	4.3	3.97	4.02	3.62

Fig. 41.5 Actions by Tourists to promote Responsible Tourism (Source: Authors' survey)

review, the important thing is to build a foundation so that the policies should base on the principles of sustainability and are carried out thoroughly.

However, this study has some limitations due to the small sample size. Furthermore, this study suggests the list of actions to promote responsible tourism, but it does not analyze the link between the actions and their impacts on the destination. In a further study, the authors intend to focus on government policy that affects tourism sustainability. In this way, we can propose essential solutions for responsible tourism in Vietnam.

Appendix

Actions to Promote Responsible Tourism in Vietnam.

No.	Action	Mean value	
		Expert ($n1 = 20$)	Tourist ($n2 = 122$)
	Travel agents and tour operators		
A1	Promote economic and human development in the places where the company operates	3.95	3.83
A2	Promote awareness of the importance of responsible behaviors in the destination of travelers and tourists	4.15	4.47
A3	Deliver training programs in the company on sustainability and responsible consumption in the value chain	4.25	4.38
A4		4.30	4.61

(continued)

No.	Action	Mean value	
		Expert ($n1 = 20$)	Tourist ($n2 = 122$)
	Encourage tourists to protect the environment of host destinations		
A5	Introduce labor standards for employees	4.10	4.25
A6	Raise the cultural awareness of tourists	4.30	4.46
A7	Provide decent working conditions for employees	4.10	4.20
A8	Establish adequate safety and hygiene measures in the daily activities, products, and services of the company	4.25	4.32
A9	Encourage the recruitment and training of young people in the local communities	4.05	4.24
A10	Implement management systems that are certified following international standards	4.05	4.16
A11	Training and evaluating suppliers and by including the relevant clauses of sustainability in contracts	4.25	4.27
	DMOs		
B1	Encouraging green and resilient infrastructure using local materials and labor to promote sustainable cities	4.15	4.35
B2	Use local labor and suppliers, value and promote local culture, and protect the environment	3.80	4.26
B3	Develop common sustainability standards and methodologies concerning the life cycle of tourism services and products	4.25	4.30
B4	Sustainably manage and protect marine and coastal habitats at destination sites	4.05	4.47
B5	Put in place measures to raise awareness among tourists and local communities regarding safeguarding the environment	4.30	4.45
B6	Disseminate the management models and good practices of companies in the sector in the areas of social responsibility and sustainability	4.20	4.20
B7	Carry out cooperation projects focused on the development of local economies	4.05	4.12
B8	Create public-private partnerships with civil society, universities, the public sector, and other companies in the tourism sector or others to carry out projects of sustainable tourism	4.15	4.24
	Accommodation, transportation, and food providers		
C1	Carry out sustainable water management in all activities	4.30	4.30
C2	Establish energy-saving and energy-efficiency measures in the activities of the company	4.35	4.41
C3	Invest in facilities, technology, and transportation with equitable and affordable access for all	4.20	4.15
C4	Continuously determine, evaluate, and prevent environmental risks	4.05	4.25
C5	Develop a code of ethics in the company to ensure responsible and transparent management and ethical behavior	4.25	4.29
	Tourists		
D1	Not take holidays away from home at all	2.30	1.78
D2	Travel less often	2.05	1.85

(continued)

No.	Action	Mean value	
		Expert ($n1 = 20$)	Tourist ($n2 = 122$)
D3	Require tour operators to provide transparent information about the environmental and social background of their products	4.20	4.12
D4	Spend more time at a specific destination	3.15	2.93
D5	Spend more on attractions	3.15	2.66
D6	Conserve water at the destination	4.30	4.44
D7	Recycle the rubbish	3.75	3.84
D8	Experience the culture at the destination	4.20	4.30
D9	Use public transport to get to the destination and to travel around, while on holiday	4.00	3.97
D10	Boycott hotels and resorts that have a poor reputation on environmental issues	4.10	4.02
D11	Pay to go on a holiday to work on a conservation project	3.80	3.62

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Chapter 42
Fostering Sustainable Development by Eliminating Gender Stereotypes in Career Choice

Thuy Hang Truong and Kim Anh Duong

Abstract Eliminating gender stereotypes and gender inequality has been one of the key global priorities, especially since the United Nations' adoption of the 2030 Sustainable Development Agenda in September 2015. Sustainable Development Goal No.4 (SDG4) *to ensure inclusive and equitable quality education and promote life-long learning opportunities for all* emphasizes the need to eliminate gender inequality in education, to ensure the rights to choose and the rights for equal access for all learners. As such, it is necessary to eliminate gender barriers in education, including gender stereotypes in career choice. The questions are *what are the gender stereotypes in career choice? What are the factors influencing gender stereotypes in career choice? What are the solutions to eliminate gender stereotypes in career choice to address gender inequality in education, contributing to sustainable development?* Using gender sensitive analysis and gender-responsive and rights-based approach (GRRA), the authors point out that gender stereotypes exist in career choice. There are some main factors influencing gender stereotypes in career choice of high school pupils, including family, school, media, and the feelings of career relevance of the pupils themselves. Based on the analysis results, the authors propose specific recommendations, contributing to the elimination of gender stereotypes in career choice, contributing to sustainable development of people and society.

Key words Gender stereotypes · Career choice · Gender · Sustainable development · SDG4

T. H. Truong (✉) · K. A. Duong
Vietnam Women's Academy, Hanoi, Vietnam
e-mail: truongthuyhang@vwa.edu.vn

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1 Introduction

Gender stereotypes are the negative perception, attitudes and assessment on characteristics, position, role, and capacity of men or women (Gender Equality Law, 2016; Article 5, Item 5). For example, men are strong, more assertive than women, while women are gentle and more careful than men, or the notion that men are family pillars and should work in the public and the work outside home is more important than domestic work, etc. (MOET, 2015: 39).

Gender stereotypes on occupation have been the topic of national and international research over years. Most of the research confirms that the issue has considerable impacts on the career orientation of students and on the separation of career by gender. In addition to that, gender stereotypes can also limit the development of men and women in the process of pursuing their careers (Haus et al., 2013; United Nations Human Rights, 2014).

When choosing a career, high school students are often being impacted by a variety of factors, including but not limited to excitement, aspiration, their learning abilities, and external factors such as social rumors, advices from relatives, and school career orientation. Because of that, many students do not choose to follow their favorite profession (Tran, 2008: 41).

The United Nations has affirmed that it is not possible to develop sustainably without gender equality. Elimination of gender discrimination and gender inequality is one of the priorities of global focus, especially since the United Nations passes the 2030 Sustainable Development Agenda (September 2015). Sustainable Development Goal No. 4 (SDG4) "Ensuring qualified, comprehensive and equitable education, promoting lifelong learning opportunities" also emphasizes the need to terminate gender inequality in education, ensuring the rights to choose and equal access to the student. This article is written based on our recent surveys to analyze the status of gender in the career choice of young students and to propose solutions to solve the problem.

2 Methodology

This article is written based on the data of the survey "Gender differences in career choice and influencing factors", conducted in 2019 by the main author. The study subjects include 706 young students of two high schools in Tu Son town, Bac Ninh province. Students selected are in grades 11 and 12 and balanced in gender. These are the young people who begin to think, to choose, and to decide which jobs they will choose to be the future ones. This article simultaneously uses gender-sensitive analysis and gender-responsive and rights-based approach to identify gender stereotypes in career choice of male and female youth who are high school students.

3 Results

3.1 Gender Stereotypes in Career Choice of the Youth

This research has classified 21 professions selected by the youth. These are quite common professions in the society. Some new professions appear recently, as professions using social media (such as streamer, vlogger, YouTuber...) have also attracted the attention of a certain proportion of the youth. Male and female youth tend to choose differently in certain professions, showing gender differences in their career choice (Table 42.1).

The figures show a statistically significant difference between female and male youth in future career option tendency ($P < 0.001$). Males tend to choose more than females in professions such as: physician/pharmacist, artistic activity (actor, singer...), architect/graphic designer/art, and worker/chef/local craft staff. Besides, the female youth tend to choose more than men in professions such as public officials/office workers, CEOS/entrepreneurs, and business/marketing staff. Many young women tend to choose to start up and become to be businesswomen, which is an issue of concern.

Table 42.1 Intention for career choice of male and female youth (%)

Job to be chosen	Female	Male	Total
Doctor/pharmacist	49.0	51.0	100.0
Policeman/military officer	32.4	67.6	100.0
Programmer/information technology staff	7.7	92.3	100.0
Teacher	80.0	20.0	100.0
Artistic activities (actor and singer)	41.7	58.3	100.0
Auditing/accounting	87.8	12.2	100.0
Architects/graphic designers, and fine arts staff	40.9	59.1	100.0
Engineer (construction, mechanic, and electrics)	28.2	71.8	100.0
Beauty-maker (nail, hairdresser, and makeup)	92.9	7.1	100.0
Pilot	0.0	100.0	100.0
Airhostess	82.4	17.6	100.0
Tour guide	73.3	26.7	100.0
Interpreter	89.8	10.2	100.0
Journalist/writer	84.6	15.4	100.0
Banking officer	63.6	36.4	100.0
Doing business/marketing	56.8	43.2	100.0
Lawyer	72.7	27.3	100.0
Social network staff (streamer, vlogger, youtuber...)	10.0	90.0	100.0
CEO/businesswoman/businessman	60.0	40.0	100.0
Official/officer	56.3	43.8	100.0
Worker/chef/local worker	47.4	52.6	100.0

Source: Survey in Tu Son, Bac Ninh

Males tend to choose more than females in professions such as public security/military officer, programmer/information technology, engineers (construction, machine building, and electronics), and new occupations appearing in recent times (streamer, Vlogger, YouTuber, etc.). Only men choose to be pilots. Females tend to choose more than males in professions such as teachers, auditors/accountants, aviation practitioners, tour guides, interpreters, journalists/writers, bankers, lawyers, and beauty makers (nail, hair, and makeup)—these are almost only female options.

Overall, young men tend to choose complicated occupations that require high technical expertise and good health/fitness. Young women tend to choose careers that are said to be somewhat gentle and technically less complex.

It should be noted that the gender differences mentioned above are also the gender stereotypes in career choice of the youth. Ideas of high school students clearly explain this point.

> *Young men with good academic skills are more inclined to choose highly technical careers. They like to study in schools such as Polytechnic, Civil Engineering, Transportation ... Later, after graduation, they become construction engineers, electronics engineers, mechanical engineers ... Girls often like stable jobs like public officers, or office workers. So, the girls often choose to study in C and D group and take exams in universities like Foreign Trade University, Humanities and Pedagogy. (In-depth interview, female, 18 years old).*
>
> *I think that females choose the "gentle" occupations like teachers, accountants, officers. There are not few females choose business job. The jobs like policemen, pilots are suitable only to men. Females are not strong enough to do these jobs (In-depth interview, male, 18 years old).*

Shinnar et al. (2012) suggested that careers are often divided into two categories: occupations suitable for men and occupations suitable for women. For example, teachers, nurses, caregivers, waiters, and secretaries are considered suitable jobs for women; engineers, doctors, judges, and senior managers are suitable jobs for men. Individuals, therefore, often choose a career based on this division.

Vietnam is in the transition period, so along with accepting new, modern, and progressive ideas, there are still old and backward ideas. Gender stereotypes in general and gender bias are not yet eliminated. The results of this research on gender stereotypes in career choice raise many interesting questions. For example, why are there still gender stereotypes in career choice? What factors affect these gender stereotypes? And what is the radical solution to this problem? These questions need to be further analyzed and clarified.

3.2 *Factors Influencing Gender Stereotypes in Career Choice of the Youth*

3.2.1 Perspective of the Youth on Career Suitability

The concept of career suitability by gender is closely related to gender stereotypes in career choice. In case the youth have gender stereotypes in their career perspective, it is possible that they will have gender stereotype in career choice (Table 42.2).

The youth nowadays are more open and less stereotypical in career choice perspective. Most of the youth think that the careers they choose are relevant for both sexes. However, the gender stereotypes on career choice clearly express via several jobs, such as policeman, programmer, engineer (construction, mechanic, and electronics), and pilot. Most of the youth think that those jobs are mainly suitable to men. Even with the job of policeman, engineer, and pilot, no informant giver thinks that these jobs are more suitable to women.

Table 42.2 Perspective of the youth on career suitability by gender (%)

Jobs to be chosen	More suitable to women	More suitable to men	Suitable to both sexes	Total
Doctor/pharmacist	8.2	18.4	73.5	100
Policeman/military officer	0.0	55.9	44.1	100
Programmer/information technology staff	2.6	55.3	42.1	100
Teacher	40.0	0.0	60.0	100
Artistic activities (actor and singer)	10.0	10.0	80.0	100
Auditing/accounting	32.7	2.0	65.3	100
Architects/graphic designers, and fine arts staff	4.5	27.3	68.2	100
Engineer (construction, mechanic, and electrics)	0.0	59.0	41.0	100
Beauty maker (nail, hairdresser, and makeup)	28.6	0.0	71.4	100
Pilot	0.0	60.0	40.0	100
Airhostess	29.4	0.0	70.6	100
Tour guide	0.0	0.0	100.0	100
Interpreter	10.2	4.1	85.7	100
Journalist/writer	7.7	7.7	84.6	100
Banking officer	9.1	18.2	72.7	100
Doing business/marketing	10.3	11.1	78.6	100
Lawyer	9.1	0.0	90.9	100
Social network staff (streamer, vlogger, youtuber...)	0.0	0.0	100.0	100
CEO/businesswoman/businessman	2.0	12.0	86.0	100
Official/officer	0.0	0.0	100.0	100
Worker/chef/local worker	15.8	26.3	57.9	100

Some professions have little or no discrimination in the concept of men or women such as business/marketing, social networking professions (streamer, V-blogger, YouTuber), and office worker/staff. For these professions, most young men think that females do fit.

There are 15/21 different concepts in the world with different levels of Khan. It can be said to exist about careers in young men's conception. They think that there are professions that fit only boys, or are more suited to men, and there are professions that match only women or women who are better suited. These professions are said to be suitable for men rather than those that require a lot of health and technical and professional skills. These professions are more suitable for women, which are said to be less complex, less technical, gentle profession, and beauty profession and are not too hard.

In-depth interviews and focused group discussions provided similar results.

Females study Pedagogy, later to be teachers, that is a suitable trend, because the work is not too heavy. Or women can also do work related to offices or being civil servants/officials. Female is not suitable for Polytechnic or Civil Engineering. Because even while learning, the study loads of those schools are very heavy. Later, after graduation, being engineers also requires strong health and high willpower to do the job. (In-depth interview, male student, grade 11)

I intend to choose the job of an officer. It is my favorite job. I have no special reason. I think I am a man, with good health, and strong thinking. So that it is suitable for that profession. When talking about that job, people mention mainly to men and boys (Focused group discussion, male student, grade 12)

Gender stereotyped perspective in career choice can lead to the act of gender stereotypes in career selection. Analyzing the youth's perceptions about the career characteristics that are suitable for men and women, we will understand more about students' gender stereotypes that exist in their perceptions and awareness.

3.2.2 Feelings About Career Characteristics That Are Suitable for Men and Women

Perceptions of suitable male/female career characteristics are strongly linked to gender stereotypes in career choice. Although here the focus is given to the feeling, not yet the awareness, but it is enough to see ideas that distinguish between male and female career characteristics (Table 42.3).

The data show that many career characteristics are perceived to be suitable for both men and women, which means without gender discrimination. Besides, there are two career characteristics—such as careful and meticulous, helping/taking care of others is considered as more suitable for women and is agreed by 1/3 to half of young people. There are eight career characteristics perceived to be more suitable for men, with a relatively low percentage of opinions. Those are communicating with many people, earning a lot of money, having opportunity for promotion, technology-related jobs, travelling often, and the jobs requiring creativity, jobs requiring strong personality/assertiveness/confidence, or a job with opportunity for higher study.

Table 42.3 Feelings about career characteristics that are suitable for men and women (%)

Career characteristics	More suitable to women	More suitable to men	Suitable to both sexes
Supporting/caring others	33.7	1.2	65.2
Careful/meticulous	49.4	2.7	47.8
Communicating with different people	2.9	12.8	84.3
Earn a lot of money	1.3	15.0	83.7
Having opportunity for promotion	1.1	22.0	76.9
Technology-related job	1.0	59.7	39.3
Traveling frequently	1.2	59.7	39.2
Innovative job	3.9	20.3	75.8
Jobs requiring strong personality/assertiveness/confidence	2.4	28.7	68.9
The job that have opportunity to take in part-time work	10.7	9.4	79.9
With opportunity for higher education	4.0	9.6	86.3
With flexible work arrangement	12.2	13.5	74.4

These characteristics are more suitable for men. That is, gender stereotypes about job characteristics still exist in the youth.

It can be observed that the occupational characteristics considered by young people to be more suitable for women are in line with the role of women in traditional societies. Accordingly, women are thought to be skillful, careful, and thoughtful and have a major role in the care work. On the contrary, the job characteristics that are considered more suitable for men are in line with traditional gender roles of men: participation in community activities, being economic pillar of the family, and with stable position in the community, having good ability in technical job, and with strong personality, assertiveness, and confidence.

> *Theoretically, our society is equal now, men and women can do the same thing. But in fact, it is not necessarily so. There are jobs with complex nature, requiring strong health, that is difficult for women to meet with specific requirement. Or simply, there are jobs that require frequent travelling, and women cannot meet the requirement. On the one hand, women's health does not allow, in the other hand, once getting married, women have more things to do than men (In-depth interview, female, 17 years old).*

Therefore, the concept/perception of job characteristics that are suitable for men and women has contributed to creating additional barriers in the career selection process of young people, contributing to maintaining gender stereotypes in career choice. McQuaid et al. (2004) also affirmed that students' career choices were affected by gender stereotypes. Some occupations are thought to be for men, such as truck drivers, engineers, plumbers, electricians, people working in armed forces; and typical jobs for women such as nurses and care givers.

3.2.3 Impacts of Family, School, Friends, and Media

Family, school, friends, and media are considered as the main factors influencing youth career orientation. Therefore, they can also be considered as the factors that contribute to gender stereotypes in youth career choice today (Fig. 42.1).

There are not few young people who have certain autonomy and political opinions and decide their own future career options. In addition, more than half of the young people surveyed said that they were influenced by many different factors in career orientation (51.4%), of which the family had a much higher impact rate than other factors (37.7%). Media have a lower influence (9.7%), and school and friends have almost no influence on youth's career choice (2.2% and 0.7%).

> *My name says a lot about my parents' expectations. A very feminine name. My parents want me to always be gentle, and always have long, shiny black hair. My parents didn't like me doing something that was said to be too different from the tradition, different from what people think of women. My parents do not want me to do adventurous, risky, labor-intensive jobs. My parents want me to have a stable job, such as civil servants or office workers, for example, and that is enough. Parents never want me to have a short haircut. I used to cut my hair short and my parents were angry, not happy at all. But it is those desires of my parents that make me sometimes feel pressure and frustrated. Parents' wishes are not wrong. My parents just want the good things for me. But sometimes I wonder why I can't do it differently (In-depth interview, female, 18 years old)*

Findings from our study also support the results of the previous research. A study by Ha Thuc Dung and Nguyen Ngoc Anh (2012) shows that people want their sons to do more technical occupations such as doctors, engineers, and skilled workers. They prefer their daughter to do light, more feminine jobs like teachers. In addition, sons must be the breadwinner of the family, so the most important thing in the career is to

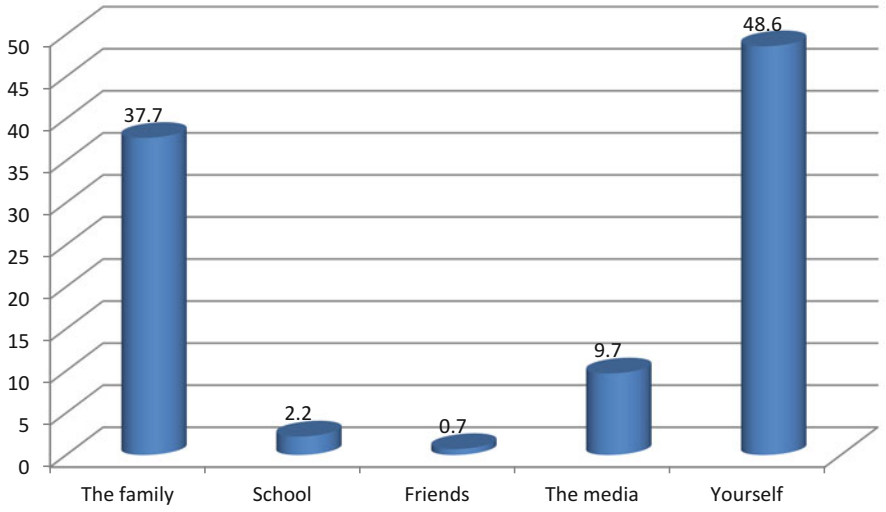

Fig. 42.1 Factors influencing career choice intention of the youth (%)

earn a lot of money. And for girls, the high income is not as important as the light job and be suitable to their wishes.

Thus, the family, school, friends, and media all influence gender stereotypes about career choice of young people at different levels. Family and communication have greater influences than the other two factors. Schools and friends are an important socializing environment, but they do not significantly affect gender stereotypes in career choices of young people. Perhaps, the family is the first educational environment, the first socialized environment that has affected young people since their childhood. The influence of the family, therefore, continues to grow in the process of development of young adulthood and career choice.

4 Conclusions and Discussion

Gender stereotypes exist in the youth and continue to be the obstacles to job development of the youth, especially the female ones. This also limits the development of the youth themselves, community, and society, as the choice of future job is being gender stereotyped.

Gender stereotypes in career choice of students are influenced by difference factors. Communication, school, peers, and especially family have different impacts and contribute to gender stereotyping in career choice of the youth. So, to alleviate gender stereotypes in career choice, we first need to remove gender stereotypes in job career right in the awareness and behavior of family members, especially of the youth's parents. This issue requires time, and the close cooperation between family, school, and the society to minimize gender stereotypes related to career choice.

Elimination of gender stereotypes in career choice will contribute to the implementation of Sustainable Development Goals No. 4 (SDG4) to ensuring quality, comprehensive and equitable education, and promoting lifelong learning opportunities. Naturally, the elimination of gender stereotypes in career choice cannot ignore supporting policies, the agenda, the goals toward gender equality, and many other specific career-related policies. The design and implementation of such legal documents have significant impacts on their effectiveness (ILO Vietnam, 2015).

In fact, some of the provisions of the Labor Code may discriminate against female laborers. Vocational training and employment supporting policies do not help alleviate gender stereotypes in career orientation and career choice. Incentive policies for enterprises using more female workers have posed different challenges. There are policies in labor and employment area that have not been gender mainstreamed fully and effectively (Anh Quang, 2017). These are things that continue to be of interest, research toward the complete elimination of discrimination, of gender stereotypes in labor, in occupation, and in related policies.

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Chapter 43
The Impact of Tourism Development on the Life of Residents in Quang Ninh Province, Vietnam

Hoa Tran and Van Nguyen

Abstract Tourism is both an economic sector and a social phenomenon; hence, tourism development in any locality will change the socio-economic life of the community. With abundant tourism resources well-known in both Vietnam and the world, along with tourism-focused development policies, Quang Ninh is one of the provinces with the fastest and most potent tourism development in Vietnam. People enjoy many benefits from tourism development. However, they also face unexpected challenges and changes in life due to this process. To research the changes that have been taking place in this province during the development of tourism, we have conducted surveys and sociological investigations of the people living in three well-known tourist centers of the province including Yen Tu, Ha Long, and Mong Cai. The results show that tourism is an essential factor that changes the economic and social life of people at tourist destinations. The findings of this research will help policymakers approach a more scientific basis for making policies to limit the negative impacts of tourism development on people's lives, targeting the sustainable development of the locality.

Keywords Travel destinations · Residents · Socioeconomic impacts · Quang Ninh · Vietnam

1 Introduction

Many scientists have studied the impact of tourism on people's lives in a locality, and many scientific works have published. Dennison the importance of tourism toward anthropology in which the interaction between tourists and local people is the main focus and the researching object of tourism anthropology. Owing to the interaction, the communities at tourist destinations face different changes, which

H. Tran (✉) · V. Nguyen
VNU University of Social Sciences and Humanities, Hanoi, Vietnam

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also depend on the characteristics of the local society or cultural characteristics of tourists, the needs of tourists, and so on. Thus, as the diversity of and differences between the tourists are more significant, the society and residential community may face different changes.

Jenkins, Advisor to the World Tourism Organization, wrote the report named *The social impact of tourism* in 1997. Jenkins remarked that along with the development of tourism, socioeconomic change was inevitable, especially in the areas where the number of tourists increased rapidly and made up a large proportion in comparison to the local population. Tourism is considered a local social change agent because the scope of tourists' activities, cultural interventions, and trade development opportunities brought about by tourism are influential in the local community. Tourism can lead to both positive and negative impacts on the local community. For the people living in areas focusing on tourism development, tourism activities facilitate the improvement of living standards through job opportunities and commercial activities, help women to participate in the workforce, and create access to advanced services associated with tourism development. People also have pride in presenting a culture imbued with local identity. On the other hand, tourism may also create harmful or misleading destination images due to the purpose of advertising to attract tourists. This causes the exploitation and decline in cultural values and the burden on resources when tourism grows (Jenkins, 1997).

The social impacts of Tourism: A case study of Bath, United Kingdom, studied the social impact of tourism in Bath, a famous tourist center since the seventeenth century in the United Kingdom. The authors used the quantitative method of randomly sending questionnaires to Bath residents to assess the response of a large number of people on several questions and gathering data for comparisons and statistics. Based on the aggregated data tables, the authors made judgments about the impacts of tourism on the Bath community, and those impacts have taken place over an extended period (Haley, 2004).

The social impacts of tourism in Brazil present the negative impacts of tourism on Brazilian society. In particular, it highlights three major social problems behind which tourism is a motivating factor. The first is child labor. The second is the sex industry. Many girls are used to serving tourists; they have lived in brothels and served tourists since they were young. The third is human trafficking—women and girls are brought from one country to another to serve in the sex industry. These are the downsides of the tourism industry in Brazil, in particular, and the problems of many tourist destinations in the world. The above studies and many other research projects have shown that tourism development will undoubtedly bring about changes in the socioeconomic life of the community at the tourist destination (Terrero, 2014).

Quang Ninh Province, with its great historical and scenic system, represented by Ha Long Bay—a famous domestic and foreign world heritage site—has obtained many achievements in tourism development in the past few decades. In the current period, facing the challenges of "brown" economic development and recognizing new development opportunities that tourism can bring to the locality, Quang Ninh province has oriented itself to develop tourism into a key economic sector in the

economic development strategy from "brown" to "green" of the province. Thus, Quang Ninh Tourism industry has the potential to boom. From 2014 to 2018, the average growth rate of the province's tourism industry was over 10% per year (People's Committee of Quang Ninh Province (QNPPC), 2017, 2018). Tourism development not only brings benefits to the economy of the province but also brings significant transformation to the lives of local people. The change in people's lives in the tourism centers of Quang Ninh is the main focus of this research.

2 Methodology

In order to carry out the research, the authors collected and processed two data groups, which are secondary data, including local documents, reports, statistics, etc., and primary data as a result of social surveys about the people in the areas.

The surveyed areas are Thuong Yen Cong commune (Yen Tu relic site), Ha Long city (Bai Chay), and Mong Cai city (border gate and Tra Co). These are the three areas considered to have the earliest tourism development in Quang Ninh province, with three main types of tourism: Yen Tu with spiritual tourism, Ha Long with sea and scenery tourism, and Mong Cai—Tra Co—with border tourism.

The authors have developed questionnaires and surveyed the people in the three areas according to the scale described in Table 43.1.

In addition to surveying by questionnaires, the authors also conducted in-depth interviews with five people and 18 local government officials.

The results from the survey are an important primary source of data as they demonstrate the impact of tourism on some socioeconomic aspects that were not addressed in existing reports and statistics, especially the impacts on the socioeconomic life of the local people.

The results obtained are processed using SPSS 20.0 software to have survey reports of each studied area and the whole province. The results from the sociological survey mainly serve to analyze and assess the impact of tourism on the socioeconomic life of the people there, reinforcing the arguments and judgments of the authors.

3 Results

3.1 The Impact of Tourism Development on People's Economic Life

Among 328 surveyed households participating in tourism business in all three areas of Uong Bi, Ha Long, and Mong Cai, 319 households believed that the income of their households had changed after they participated in tourism businesses. In

Table 43.1 Structure of survey questionnaires to assess the impact of tourism on socioeconomy of Quang Ninh province (Unit: Number of households)

Areas	Number of delivered questionnaires	Number of collected questionnaires	Number of tourism households	Percentage	Number of nontourism households	Percentage
Yen Tu	100	100	77	77.0	23	23.0
Ha Long	200	200	146	73.0	54	27.0
Mong Cai	150	150	105	70.0	45	30.0
Total	450	450	328	72.9	122	27.1

Source: Authors' survey, 2017

Table 43.2 Contribution of tourism income to total household income in Thuong Yen Cong, Ha Long, and Mong Cai (Unit: Number of households)

Areas Contribution	Thuong Yen Cong	Ha Long	Mong Cai	Total	Percentage
Below 20%			1	1	0.3
20%–50%	9	20	13	42	12.8
50%–70%	9	40	35	84	25.6
70%–90%	33	49	40	122	37.2
About 100%	26	37	16	79	24.1

Source: Authors' survey, 2017

particular, 49.7% said that the change was small and 47.6% said that the change was large.

The contribution of tourism income to total household income in the studied areas is summarized in Table 43.2.

The data in Table 43.2 show that the percentage of households with income from tourism accounting for over half of the total household income is 89.7%. It is specifically worth noting that 43.3% of the households reported their whole income originated from tourism. Through surveys in these three areas, income from tourism accounts for an important part of the total income of households participating in the tourism business. Although tourism in Uong Bi (Thuong Yen Cong commune) is highly seasonal and the income is mainly concentrated in the first 3 months of the year from January to March (with 97% of respondents), it is the area where tourism generates a great source of income for households. The number of households in Uong Bi between 70% and 100% incomes originating from tourism account for 76.7% of all households. This shows that the economic dependence of households on tourism is strong, households focus on the business for 3 months, and revenue must be used to cover their life for the whole year. In the other two areas, the proportion of income from tourism accounts for 70–100%, which is lower but still very high (58.9% in Ha Long and 53.4% in Mong Cai) because, in addition to tourism, people still participate in other work to generate income and the household's income depends on tourism less, but it is still very high.

Thus, income from tourism is an important part of the household's economic life due to the fact that a significant number of households almost entirely depend on income from tourism businesses. However, in many localities, people still need to find other work to increase their income because of high seasonal income from tourism.

Income from tourism is mainly used by people for the purpose of covering and improving the quality of life as follows: Building and repairing houses (17.3%), family expenses (20.4%), children's education (21%), travel (8.4%), etc.; numerous households use the income to invest and increase profits such as saving (16.7%), business capital contribution (8.1%) and buying real estate (8.0%). Based on the results of the questionnaire survey, we also find that the income from tourism in the three studied areas is different, reflected in the purpose of using income. As income

Table 43.3 Allocating income from tourism of households in the surveyed areas

Areas	Thuong Yen Cong		Bai Chay		Mong Cai		Total	
Results								
Criteria	#Resp.[a]	%	#Resp.	%	#Resp.	%	#Resp.	%
Buying real estate	20	7.0	42	11.7	20	5.2	82	8.0
Building houses	60	20.9	49	13.6	69	18.0	178	17.3
Shopping and spending	67	23.3	59	16.4	84	21.9	210	20.4
Business capital contribution	3	1.0	56	15.6	24	6.3	83	8.1
Saving	36	12.5	65	18.1	71	18.5	172	16.7
Traveling	24	8.4	26	7.2	37	9.7	87	8.4
Children's education	76	26.5	63	17.5	78	20.4	217	21.0
Others	1	0.3	–	–	–	–	1	0.1
Total	287	100.0	360	100.0	383	100.0	1030	100.0

Source: Authors' survey results, 2017
[a]*#Resp.* the number of respondents

increases, people use their income to improve their quality of life. It is used for everyday expenses, to build and repair houses, and to educate their children. As income increases, more is spent on entertainment, investment, and the purchase of land. (Detailed information in Table 43.3).

According to that reasoning, Yen Tu is the area with the least amount of income from tourism compared to the other two areas. The income is mainly used for House construction and repair (20.9%), shopping and spending expenses (23.3%), and children's education (26.5%), and a very small part of the income is spent on traveling, business capital, savings, and so on. Thus, tourism revenue is very important and almost the main income when more than two-thirds of respondents said that tourism income accounted for over 70% of the household's income. However, that source of income is not high, is unstable, or is only enough to improve life and not much accumulated when people still do not have money to invest due to short travel seasons. Ha Long is the area with the best income from tourism. This is also considered the largest tourist center of Quang Ninh as it accounts for about 70–80% of the province's annual tourists. The income of the people is quite good, so income use is quite equal for all spending categories. In particular, the tourism income used for business capital contribution, savings, and real estate purchase is relatively high over other areas (15.6%, 18.1%, and 11.7%, respectively).

The development of different types of tourism in the three surveyed areas also makes up differences in the choice of business fields and services of households (Table 43.4). Table 43.4 demonstrates the development of diferent types of tourism in the three surveyed areas in terms of the choice of business fields and services of households. In overall, the selection of business types of households depends on the financial ability and the actual needs of tourists when they come to that tourist destination, according to the law of supply and demand. Thuong Yen Cong commune represents the development of spiritual tourism with which the households

Table 43.4 Types of business services of households in surveyed areas

Areas	Thuong Yen Cong		Bai Chay		Mong Cai		Total	
Results								
Criteria	#Resp.[a]	%	#Resp.	%	#Resp.	%	#Resp.	%
Hotels/motels	34	23.6	33	17.0	31	13.8	98	17.4
Restaurant/catering service	35	24.3	38	19.6	37	16.4	110	19.5
Transporting tourists	26	18.1	26	13.4	44	19.6	96	17.1
Travel	17	11.8	20	10.3	26	11.6	63	11.2
Selling goods at tourist areas	27	18.7	33	17.0	52	23.1	112	19.9
Making souvenirs/ handicrafts	5	3.5	20	10.3	11	4.9	36	6.4
Additional services	–	–	23	11.9	24	10.7	47	8.3
Others	–	–	1	0.5	–	–	1	0.2
Total	144	100	194	100	225	100	563	100

Source: Authors' survey results, 2017
[a]*#Resp.* the number of respondents

mainly deal in accommodation services (23.6%), catering (24.3%), selling goods at relic sites (18.8%), and transporting tourists (18.1%). Tourists coming to Yen Tu relic visit the pagoda scene, so they do not have a high demand for other services, but mainly catering services and overnight stays. Besides, the planning of the relic and the selling kiosks at the foot of Yen Tu have also created convenience for tourists to buy products of Yen Tu. Bai Chay area is an attractive tourist resort center of domestic and international tourists, so in this area, tourism services are diversified and developed relatively evenly, unlike Thuong Yen Cong area. In addition to the essential services, many households provide additional services to tourists such as visas, interpreting, booking air tickets, and so on. These supplementary services are often provided by travel business households mainly to serve international customers. In Mong Cai, 10.7% of the surveyed households said that they provided additional services for tourists such as visa, laissez-passer, money exchange, and so on, mainly concentrated in the area near the border gate. In addition to the complimentary service group, cross-border tourism with a large number of tourists coming to Mong Cai to visit and buy goods at the border area has led to the fact that numerous Mong Cai households selected business services such as tourist transportation (19.6%) and sales (23.1%).

3.2 The Impact of Tourism Development on Residents' Social Life

The tourism business households had a change in their awareness of participating in social organizations compared to before doing business. This change may be due to

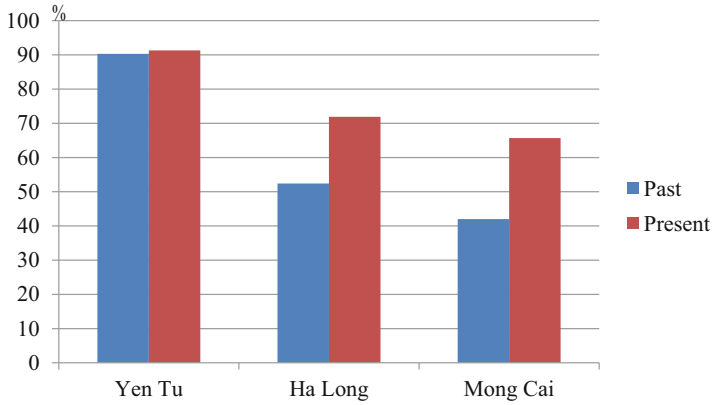


Fig. 43.1 Participation of nontourism business households in the family organization

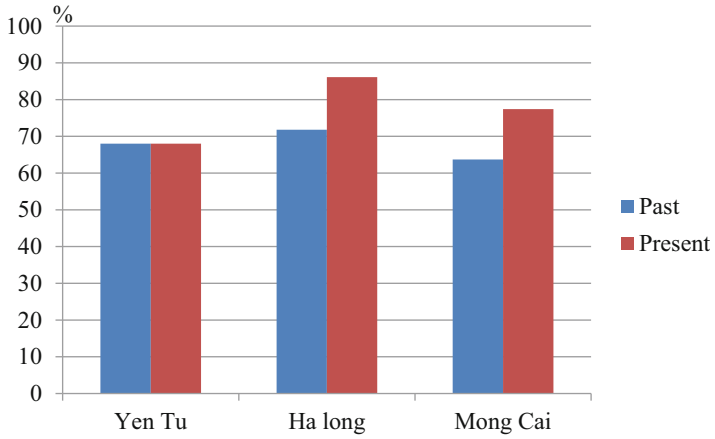


Fig. 43.2 Participation of tourism business households in the family organization

many other factors, but tourism must be a key and important factor that leads to that change.

In Uong Bi, the traditional cultural and social factors of Thuong Yen Cong commune have rapidly changed over the past 15 years, during which tourism developed at a high rate in the locality.

Survey results in the locality show that the participation of households in the family organizations has almost no change compared to before the tourism business and after the business.

Also, there is no significant difference between the households engaged in the tourism business and the nontourism business (information in Figs. 43.1 and 43.2).

This shows that families are always essential and close organizations for the Vietnamese people. However, there is a significant change in the participation of

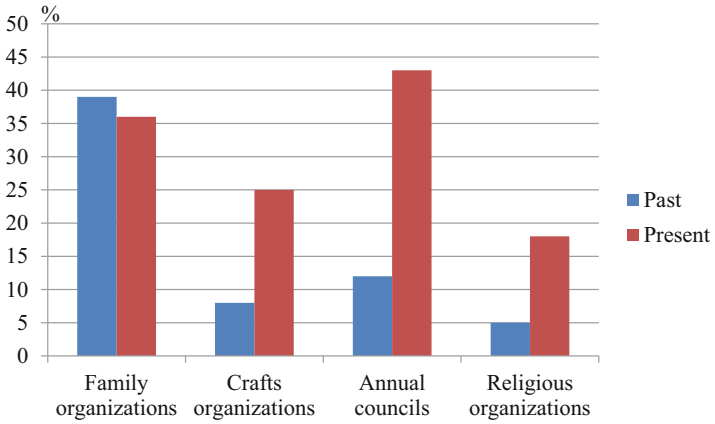
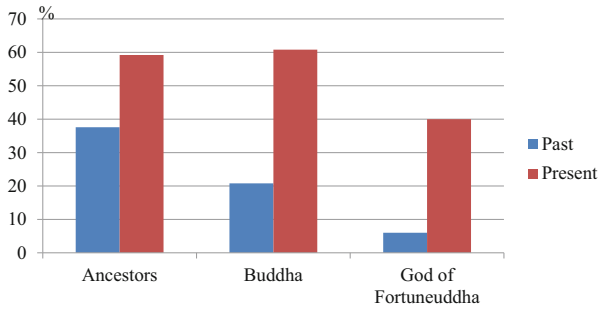


Fig. 43.3 Participation in before and present social organizations of tourism business households in Quang Ninh

Fig. 43.4 The change of worship objects of tourism business households in Quang Ninh province



households in other organizations such as craft organizations from 8.1% to 25.2% and annual councils from 12.1% to 43%.

More modern social organizations such as the elderly associations, veterans' associations, women's unions, and trade union organizations all have an increase in the number of families participating. This may be explained that in the course of the tourism business, people need to participate in more social organizations, wishing to strengthen social relations and links to develop together. Furthermore, people with higher income have the opportunity to exchange and share, and therefore, traditional social organizations also have more chances to expand (information in Fig. 43.3).

In addition to the change in the participation in social organizations, there is also a change in people's worship activities. Before doing business, families mainly worshiped their ancestors, but after joining tourism businesses, more and more households worshiped the God of Fortune (from 6% to 40%) and Buddha (from 20.8% to 60.8%) in addition to their ancestors (from 37.6% to 59.2%) (Illustrated information in Fig. 43.4).

The vigorous development of Buddhism at Yen Tu is understandable because this has been the center of Buddhism for a long time. However, the significant increase in the household practicing Buddism is a solid evidence of the impact of active local spiritual tourism development to local people religious awareness and beliefs. Buddhism increasingly develops and plays an integral part in the faith of the people here. Along with the increase in Buddhist worship, the number of households participating in religious organizations also increased here (from 5% to 17.8%), which is entirely consistent with the general trend, needing to unite and gather together to carry out religious and belief activities.

In the two areas of Ha Long and Mong Cai, urban areas were previously formed with the strong development of commercial activities and the population here include people from many other places. Therefore, the elements of traditional social organizations of communes and villages are somewhat loose. Before doing tourism business, the households participated in family organizations at the rate of 17.9% in Mong Cai and 26.9% in Ha Long, the annual council set the rate of 2% in Mong Cai and 17.6% in Ha Long, and craft organizations set the rate of 6.7% in Mong Cai and 17.1% in Ha Long. These rates increase after households participate in the tourism business, which may indicate the general trend that after doing business, households need to strengthen their social relations and become more involved in local social organizations. Besides, more modern social organizations such as women's unions, veterans' associations, industry associations, and so on also have a higher percentage of households participating in the tourism business than before. The change in worship is similar to that in Thuong Yen Cong.

Thus, it can be seen that the participation of households in the tourism business is also a factor that makes households change their perceptions, affecting the participation of social organizations. No matter which organization it is, participation tends to increase, as if it proves that when the economic condition is better, people have a need to contribute to their homeland and families more, and they also need to expand further social relations.

3.3 The Change in Foreign Language Proficiency and Use of People

Quang Ninh tourism is increasingly attracting many international tourists. Quang Ninh, with the advantage of the borderline and border gate with China, easily attracts Chinese tourists. It also has the world wonder of Ha Long Bay, so the number of European, Korean, and Japanese tourists coming to Quang Ninh are also very high. According to statistics, the number of international tourists to Quang Ninh in recent years have increased by an average of 10% per year (People's Committee of Quang Ninh Province (QNPPC), 2017). In order to serve international tourists, the human resources in the tourism industry must undoubtedly have a certain level of foreign

Table 43.5 The use of foreign languages of tourism business households (Unit: %)

Area / Criteria			Ha Long	Mong Cai	Thuong Yen Cong
English	Using subjects	Tourists	70.8	23.5	29.9
		Partners	12.5	21.6	0
		Family	0.7	2.0	0
		No idea	16.0	52.9	70.1
	Using frequency	Often	43.1	15.7	6.5
		Rarely	27.8	9.8	28.6
		No use	9.7	65.7	20.8
		No idea	19.4	8.8	44.2
Chinese	Using subjects	Tourists	70.1	46.1	0
		Partners	11.1	23.5	0
		Family	4.2	18.6	0
		No idea	13.9	11.8	100
	Using frequency	Often	43.8	57.8	0
		Rarely	25.0	16.7	0
		No use	9.7	19.6	0
		No idea	24.6	5.9	100

Source: Authors' survey results, 2017

language proficiency and tourism business households also need to use foreign languages to improve their business.

According to the authors' survey (results in Table 43.5), the two most commonly used foreign languages in Quang Ninh are English and Chinese. The Table 43.5 depicts the usage of foreign languages of tourism business households in Quang Ninh. Overall, the two most commonly used langugaes are English and Chinese. Also, the use of foreign languages is closely related to the number of international tourists at the destination. Yen Tu tourist area, with the characteristics of spiritual tourism, has a high number of domestic tourists but a low number of international tourists. As a result, the percentage of people using foreign languages in the tourism business is the lowest, especially only using English with tourists, which is also rarely used.

However, the two surveyed areas of Ha Long and Mong Cai have a higher number of international tourists, so the use of foreign languages is different. In Mong Cai, Chinese is preferred when 57.8% say that they often use Chinese at work. This is also understandable because Mong Cai area has a border gate with China, so Chinese tourists traveling by road to Quang Ninh mainly go across Mong Cai. Also, the people in Mong Cai need to trade with the neighboring country, so Chinese is advantageous. In Ha Long—Quang Ninh's most renowned tourist center—in recent years, more than two million international tourists have been welcomed each year, and the foreign language is used more frequently; in particular, 43.1% of the respondents said that they often used English and 43.8% used Chinese, and the main communication subjects are tourists and partners. This shows that using

Table 43.6 The use of foreign languages of nontourism households (Unit: %)

Area Criteria			Ha Long	Mong Cai	Thuong Yen Cong
English	Using subjects	Tourists	17.6	2.1	63.6
		Partners	29.8	2.1	4.5
		Family	0	0	9.1
		No idea	52.6	95.8	22.7
	Using frequency	Often	43.1	15.7	0
		Rarely	27.8	50.0	8.7
		No use	9.7	29.2	73.9
		No idea	40.4	4.2	17.4
Chinese	Using subjects	Tourists	14.0	6.2	0
		Partners	40.4	0	0
		Family	8.8	2.1	0
		No idea	36.8	91.7	100
	Using frequency	Often	26.3	20.8	0
		Rarely	33.3	64.6	0
		No use	15.8	12.5	0
		No idea	24.6	2.1	100

Source: Authors' survey results, 2017

English or Chinese is becoming increasingly popular in Ha Long. The higher the number of international tourists is, the more business households realize that knowing a foreign language is an advantage and an essential condition to serve tourists.

The comparison between tourism business households and nontourism households in surveys also shows more clearly the change in the trend of using foreign languages. For nontourism households, the use of English and Chinese is still limited (information in Table 43.6). On the other hand, when it comes to nontourism households, the use off English and Chinese is still limited, shown in Table 43.6. In fact, nontourism households often do not use foreign languages, and in the case of using foreign languages, they mainly use with partners or tourists. Ha Long is still the locality where people had the highest demand for foreign languages when only 9.7% of the households answered that they did not use English and 15.8% did not use Chinese. Specifically, despite not doing tourism business and not having much contact with tourists, this locality has the highest number of households using foreign languages in communicating with partners (29.8% use English and 40.4% use Chinese). This shows that trading and relations with foreign partners, especially China, are outstanding here. English is also simplified and used more in Ha Long when the main English communication subjects are family and friends. This proves that local people have recognized English as an essential foreign language and invested in developing and improving foreign languages.

4 Conclusion

The results of the survey, analysis, and evaluation show the change of economic and social life of the households in three major tourism centers of Quang Ninh province under the impact of tourism development. After participating in the tourism business, the economic life of households has been significantly improved. Tourism has brought higher income, helping households to cover living costs, education, home construction, and repair. A significant percentage of households can save or contribute capital to business with this source of income.

Participating in the tourism business also helps the local families to increase the need to participate in social organizations, to change cultural and social conceptions, and to encourage the use of foreign languages of households. This change will continue to occur, and the difference between tourism business households and nontourism households is growing. If tourism continues to grow as today and the local government does not have appropriate orientation policies, negative impacts will increase and the benefits that tourism will bring to people will be affected. Based on the results of this paper, policymakers can consult to make appropriate policies to ensure the sustainable development goals of the locality.

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