Factors Affecting the Relationship Quality Between Coffee Farmers and Enterprises: A Case Study of the Central Highlands of Vietnam

Hoa Thi Thu Ha, Dang Bach Nguyen, Hoa Le Dang, and Nhung Thi Hong Pham

Abstract The study analyzes factors affecting the relationship quality between coffee farmers and processing and export enterprises. A sample size of 171 coffee farmers in the Central Highlands of Vietnam is used for this study. The structural equation modeling (SEM) is utilized. The results show that five factors influencing the relationship quality are collaboration, perceived price, profit and risk sharing, power asymmetry, and effective communication. Perceived price has the strongest positive influence on the relationship quality. However, the relationship quality is negatively affected by power asymmetry. At the same time, a positive relationship between coffee farmers and processing and export enterprises brings farmers' profits and positively impact on the intention to continue trading. Policymakers should focus on improving the quality of relationships through information sharing and ensuring fairness in transactions between coffee farmers and processing and export enterprises.

Keywords Coffee farmers · Processing and export enterprises · Relationship quality · Central Highlands of Vietnam

1 Introduction

Coffee is Vietnam's top export agricultural product and distributed through many different channels. Farmers can choose to deal with various buyers depending on their preferences. Coffee is a main crop to alleviate poverty for farmers in the Central Highlands, with nearly 20% of the total export value (Nguyen et al., 2021). In the early 1980s, the whole country had about 20 thousand hectares of coffee, with an annual output of 4 to 5 thousand tons of coffee beans. After more than 30 years, Vietnam's coffee growing area has reached over half a million hectares with an output of more than 1 million tons. The Central Highlands is the largest coffee producing region of Vietnam. The coffee production area of the whole region accounts for

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more than 90% of the coffee production area of the country (Nguyen & Bokel-mann, 2019). In recent years, the government has had guidelines and policies to support investment and development of coffee production. The planning-oriented coffee planting has contributed to creating more jobs and the economic development of smallholder farmers. At present, hundreds of private (including foreign-invested) and state-owned exporters/processors are thriving in the coffee industry, making the coffee bean market highly competitive.

Relationship quality helps unite farmers and their buyers, enhancing coopera-tion and mitigating the disadvantages of nature (Bandara et al., 2017). Moreover, when stakeholders trust this relationship, they will actively execute transactions in the most efficient way (Baihaqi & Sohal, 2013). However, farmers still face many limitations in participating in association with processing and exporting enterprises. The production and consumption of coffee still face many difficulties because the relationship is still loose and there is no legal effect. Farmers do not have power in their relationship with enterprises, so they often suffer losses and unable to protect their own interests. Among those difficulties and challenges, the problem of building the relationship between farmers and buyers is considered as one of the key issues, having a decisive influence on coffee production and consumption.

Most of the previous studies have addressed aspects of relationship quality in different agricultural products. However, the theoretical basis and methods are not the same in these studies. Most studies unify that the quality of the relationship is perceived and assessed through the perceptions of the stakeholders (Lees & Nuthall, 2015; Schulze & Lees, 2014; Schulze et al., 2006). Furthermore, the relationship between farmers and processing and exporting enterprises in the coffee industry is also different from that of other agricultural products (Gërdoçi et al., 2017; Nandi et al., 2018). Most of the studies in Vietnam focus on analyzing difficulties in the production and consumption of agricultural products (Nga & Niem, 2017; Truc & Hanh, 2017) or understanding the preferences of farmers to choose different distri-bution channels (Nguyen & Bokelmann, 2019; Pham et al., 2019). In the supply chain, studies on the quality of the relationship between farmers and processing and exporting enterprises are not focused. These studies rarely mention measures to help parties improve cooperation between them. As such, this study is conducted to identify determinants of the quality of the relationship. Several policy implica-tions are proposed to enhance mutual satisfaction, help balance power, and facilitate information sharing among parties.

2   Methodologies

2.1   Study Area

The Central Highlands consists of a series of adjacent plateaus, located west of the Annamites mountains range with an average elevation of 500–800 m. The study area

covers 54,508 km2, accounting for 16.5% of the area and approximately 6.1% of the population of Vietnam. There are five provinces in the Central Highlands of Vietnam, namely Gia Lai, Kon Tum, Dak Lak, Dak Nong, and Lam Dong. With the advantage of the monsoon climate and fertile basalt soil, the region has focused on developing industrial crops such as coffee, cocoa, pepper, and mulberry with high economic efficiency for households. Cashew and rubber trees are also grown here. Coffee is the most important industrial crop in this region. Besides, the Central Highlands is the second largest rubber growing area after the Southeast. It also has a large forest area with diverse biota, rich mineral reserves, and great tourism potential. The Central Highlands can be considered as the roof of the central region with a great protective function. However, destruction of natural resources and indiscriminate exploitation of forest products can lead to the risk of depleting forest resources and changing the ecological environment. In fact, the average area of coffee cultivation land of farmers is estimated at 1–2 ha/household.

Coffee is usually picked from October to December or from November to January. Normally, the provinces of Gia Lai, Kom Tum, Dak Lak, and Dak Nong are the regions that specialize in growing Robusta coffee. Arabica coffee is mainly grown in Lam Dong province. Currently, coffee development is not sustainable, requiring the urgent restructuring of this crop in association with the application of reasonable techniques. The application of scientific and technical advances has not been synchronized. The improper investment in fertilizer compared to the recommended process has resulted in soil degradation. The waste of irrigation water leads to a serious decrease in the groundwater level. In addition, farmers use pesticides inappropriately and in the wrong dosage. Most of the coffee growing area in Vietnam has no shade trees or windbreaks. Farmers harvest coffee when the percentage of green berries is still high. The processing facilities are not built to match the scale of production, reducing the quality of Vietnam's coffee. The coffee industry is also facing the situation of "old" coffee (yield less than 1.5 tons/ha, orchards over 25 years). Although the re-cultivation of coffee in the Central Highlands has been promoted, the area of "aging" coffee still accounts for a large proportion.

Local authorities have encouraged farmers to link up with processors to improve competitiveness in the world market. Processors and exporters in the region also rely on buying agents to guarantee their supplies of dried coffee beans. Some processing and exporting companies have been trying to contact coffee farmers, but the result is unremarkable. This explains that only a small proportion of dried beans are sold directly to processors or exporters. Currently, there is fierce competition between processors and exporters in collecting coffee in the market.

2.2 Empirical Studies and Research Hypotheses

The rationale for relationship quality is based on the relationship marketing theory (Crosby et al., 1990; Dwyer et al., 1987). Therein, interconnectivity and interdependence are the essences of business relationships. A long-term business relationship

helps both parties share expectations about future transactions (Schulze & Lees, 2014; Schulze et al., 2006), maintaining long-term cooperation between buyers and suppliers (Fischer, 2013). Maintaining business relationships is a major challenge in a competitive environment. The relationship between buyers and sellers is mutually binding to share benefits in future transactions (Boniface, 2011). Structural features of business relationships include continuity, complexity, symmetry, and informality. Relationships are also complex because it includes both business relationships and social relationships. This relationship concerns the interests of buyers and sellers. In the supply chain, relationship management is necessary, but it needs to be done systematically and in accordance with each specific chain.

All business relationships are based on: trust, commitment, and satisfaction. Relationship quality is related to positive levels of information sharing, quality of long-term oriented communication, and relationship satisfaction. When the transaction process meets the expectations of the parties, it thus contributes to a stable relationship (Schulze & Lees, 2014). Cooperation is based on mutual trust between the parties (Capaldo, 2014; Ebrahim-Khanjari et al., 2011). The partners will commit to the implementation of the agreements, thereby maintaining and strengthening the relationship (Chen et al., 2011; Nyaga et al., 2010). The reciprocal adaptation of the partners binds them together, and this binding manifests in the mutual commitment between the partners.

Most of the approaches referred to transaction cost economics (TCE) theory (Bhagat & Dhar, 2014; Lees & Nuthall, 2015; Nandi et al., 2018; Son, 2011) and the behavioral approach (Boniface, 2011; Le & Batt, 2012; Loc & Nghi, 2018) in studying relationship quality in the agricultural sector. Other approaches also used theories such as organizational justice theory (Mühlrath et al., 2014), commitment-trust theory (Puspitawati, 2011), random utility theory (Newman & Briggeman, 2016), life cycle approach (Rota et al., 2013), and signaling theory (Bandara et al., 2017). Most studies use a combination of qualitative and quantitative methods. Most published studies still refer to empirical investigation. There has been an increase in the use of structural equation models (SEM) in studies of relationship quality in the agricultural sector in recent years (Bandara et al., 2017; Fischer, 2013; Loc & Nghi, 2018; Nandi et al., 2018). In addition, the OLS regression method and exploratory factor analysis or component analysis are widely used (Boniface, 2011; Son, 2011; Le & Batt, 2012; Dlamini-Mazibuko et al., 2019).

Many studies based on transaction cost economics perspectives have approached different governance structures. Vertical integration is a popular form of management in the supply chain. The cooperation reflects the level of mutual understanding between partners. This is an important factor because the stakeholders can dialogue and solve problems more simply and easily with good cooperation (Lees & Nuthall, 2015). In addition, the received price affects the implementation of agreements between farmers and their partners (Jena et al., 2011). The quality of the relationship is strengthened when the parties take measures to share profits and risks in transactions (Lages et al., 2005; Sun et al., 2018). In a Business-to-Business (B2B) relationship, power partners will allow or use their influence over the actions of other individuals or partners in an imperative manner (Bandara et al., 2017; Lees &

Nuthall, 2015). Effective communication gives farmers a significant advantage by being provided with the most appropriate information. Access to information allows parties to adapt to supply and market issues more quickly. It means that the actors are informed most suitably (Kac et al., 2016). The relationship enhances interests and the desire to continue doing transactions (Jena et al., 2011). At the same time, the parties always expect to continue to receive benefits from the relationship. Therefore, the result of a quality relationship is the intention of continuity in the execution of transactions (Schulze et al., 2006). In addition, quality relationships enable farmers to reinvest in their businesses and improve their long-term economic performance (Baihaqi & Sohal, 2013). In other words, the business performance of the stakeholders is improved through the relationship. Based on the research model adapted from Hoa et al. (2022), there are seven hypotheses raised in this study:

H1: The effect of collaboration on the relationship quality is positive.

H2: The effect of perceived price on the relationship quality is positive.

H3: The effect of profit and risk sharing on the relationship quality is positive.

H4: The effect of power asymmetry on the relationship quality is negative.

H5: The effect of effective communication on the relationship quality is positive.

H6: The effect of relationship quality on farmers' profitability is positive.

H7: The effect of relationship quality on intention to maintain the relationship is positive.

2.3 Data Collection

This study uses data from the districts of Dak Lak, Lam Dong, and Gia Lai province. First, the secondary data was collected from BMTCA (Buon Ma Thuot Coffee Association), VICOFA (Vietnam Coffee Cocoa Association), WASI (Western Highlands Agro-Forestry Scientific and Technical Institute), Lam Dong DARD, Dak Lak DARD, and Gia Lai DARD. Simultaneously, the structured questionnaire was built based on typical attributes of transaction costs to collect data for the study. The minimum sample size should be 170 because the number of observations should be five times the number of variables (Hair et al., 1998). This study used a direct survey method through structured questionnaires to interview coffee farmers who sold their products to enterprises. Most of the interviewed farmers have less than 2 hectares of coffee growing area. The quota sampling method was used to select the sample size for the study based on the total number of coffee households in each district and the production area of each household. Finally, SPSS 22.0 and AMOS 20.0 software were used for statistical analysis of coffee production and regression of factors affecting the quality of the relationship between farmers and enterprises through 171 completed questionnaires.

The study used the Likert scale has five points, where 1 = fully disagreement, 2 = disagreement, 3 = neutral, 4 = agreement, and 5 = fully agreement. Exploratory factor analysis and confirmatory factor analysis are used to test the discriminant and convergence of the scales in the model after they have met the requirements for reliability. Finally, structural equation modeling was used for evaluating the hypotheses test and estimating the proposed model. In the study, the popular goodness-of-fit tests often use measures such as chi-square, CMIN/df, CFI, TLI, GFI, and RMSEA. The study consists of eight concepts: Relationship quality (RQ), Collaboration (CN), Perceived price (PP), Profit and risk sharing (RS), Power asymmetry (PA), Effective communication (EC), Relationship continuity intention (CI), and Farmers' profit (FP) (Table 4).

3 Results

3.1 Overview of Coffee Production in the Central Highlands of Vietnam

Most of the surveyed farmers grow Rubosta coffee, accounting for 90% of coffee varieties in the area. The survey results also show that interviewed coffee farmers' age ranges from 20 to 67 years, with an average age of 40.1 years. Therein, the highest proportion is the age-group from 25 to 35 years old (accounting for 39.8%) and the age-group from 35 to 45 years old (accounting for 29.2%). Concurrently, the average education level is 9.4, and most of the household heads are male (accounting for 73.7%). The percentage of interviewed farmers in high school was 35.1%, in secondary school was 30.4%, and in primary school was 10.5%. At the same time, the average yield is 2–3 tons/ha and the profit is 60–80 million VND/ha/year. The average farm size is 1.4 hectares, which hampers farmers to benefit from economies of scale and apply synchronous production technologies. Farmers with 1–2 hectares of coffee land account for 22.8% of the entire sample.

In general, the cultivated area in the Central Highlands tends to decrease due to various reasons. The small-scale production of smallholder farmers leads to difficulties such as technological improvement, application of mechanization in production and processing, linkage in production and business, and access to market information. The number of interviewed households said that difficulties encountered in the production process were lack of capital, difficulty in accessing loans (28.3%), lack of productive land (28.7%), lack of labor (22.4%), and difficulty accessing production techniques (20.6%). Lack of water for irrigation in the dry season is also one of the difficulties that people face (accounting for 6.1%). Coffee gardens are located far from water sources, so a lack of water for irrigation in the dry season is unavoidable.

Market intermediaries are actors that exist between producers and final consumers. The number of market intermediaries involved in a marketing channel varies depending on the nature of the products and the place of growers. Actors in the

coffee supply chain of the Central Highlands of Vietnam comprise farmers, local traders, purchasing agents, and processors/exporters. In this way, producers can sell at high prices by developing relationships with their buyers. Coffee farmers have been informed about changes in prices and export markets. Agents buy coffee beans from farmers through verbal contracts. Some coffee farmers deposit a large percentage of their coffee because of their credit tie-up. When coffee farmers feel the price is high, they decide to sell the quantity of coffee from their consignment. In addition, some companies have recently used direct, informal, and simple production contract with coffee farmers. However, exporters and processors can buy coffee beans through intermediaries (buying agents or local traders). In addition, some exporters and processors often sign long-term production contracts directly with smallholder farmers.

3.2 The Relationship Between Coffee Farmers and Enterprises

Three different types of contracts between coffee farmers and processing and export enterprises are informal contracts, intermediary contracts, and nucleus estate contracts. In an informal contract, the exporters and processors make informal production contracts with farmers on a seasonal basis. Specifically, some companies have recently used direct, informal, and simple production contracts with coffee farmers, such as Anh Minh, Simexco Dak Lak, and Armajaro. In this case, buyers (exporters and processors) only sign a contract with farmers. Companies only provide informal arrangements that specify the share of benefits and responsibilities of the two parties. An intermediary contract has seen as a formal subcontract by exporters and processors to intermediaries (cooperative or farmer groups) where they have their arrangements with farmers. The use of cooperatives as an intermediary is typical in this contract farming model in Amazaro and Dak Man Company. In a nucleus estate contract, the exporters and processors own and manage the estate plantation. Estate is often large and close to a processing plant where the firms can guarantee close supervision of production. These companies often sign long-term production contracts with farmers (e.g., Phuoc An and Thang Loi Company).

The survey results show that the relationship between farmers and coffee processing and export enterprises is not really effective, not ensuring long-term cohesion. Households said that they are (usually and always) satisfied with the companies accounting for 15.8 and 12.9% of the total interviewed households. Table 1 also shows that 20.5 and 14.0% of respondents trust enterprises to maintain their reputation by fulfilling their commitments. In addition, 18.7 and 14.6% of farmers said that the two sides committed to fully implementing the terms of the contracts. Moreover, the data also reveals the existence of conflicts between farmers and their buyers regarding the breach of the terms of the contracts. Specifically, there are conflicts of interest,

Table 1 Statistics of farmers' assessment of the relationship with enterprises

Aspects	Never	Rarely	Sometimes	Usually	Always	Total
Satisfaction	44 (25,7)	43 (25,1)	35 (20,5)	27 (15,8)	22 (12,9)	171
Trust	33 (19,3)	48 (28,1)	31 (18,1)	35 (20,5)	24 (14,0)	171
Commitment	43 (25,1)	26 (15,2)	45 (26,3)	32 (18,7)	25 (14,6)	171

Source The authors' calculations
Note Numbers in brackets are percentages

disputes related to time for delivery, receipt, and payment, disputes over product quality, or non-compliance with commitments.

3.3 The Reliability of Scales

Four observed variables were removed after performing Cronbach's Alpha analysis (Gliem & Gliem, 2003). Besides, EFA analysis has a Kaiser–Meyer–Olkin (KMO) value equal to 0.854 (0.5 < KMO < 1) with a significance level of 0.000 (< 0.05). Therefore, the factor analysis well fits with the data. All variables in the rotation factor matrix have factor loadings higher than 0.5 (Table 2). In conclusion, the variables are strongly correlated in each construct of the proposed model. The cumulative variance of the eight factors is 71.725% (with eigenvalue = 1.077 > 1). Bartlett's test has Sig. = 0.000 < 0.05 shows that the variables are fully correlated. The results of factor analysis are acceptable (Anderson & Gerbing, 1988; Cudeck, 2000).

After the EFA step, the scales were checked again by the CFA method to ensure more certainty about the reliability and validity of the scales. The CFA results show that the appropriateness index of the theoretical model has the expected results, such as RMSEA = 0.057 (< 0.08); CFI = 0.942; TLI = 0.933; and GFI = 0.827 (Table 3). In addition, all results are acceptable with indices of conformity such as CMIN/df = 1.556 (< 3); chi-square = 586.485; df = 377. All factor loadings are more than 0.5; therefore, observed variables have a close relationship with their representative factors. As a result, the data are suitable to represent the research model (Steiger, 1990). Contemporary, Average Variance Extracted (AVE) is more than 0.5, Composite Reliability (CR) of the scales is more than 0.7. In addition, the squared correlation must be lower than the AVE for the two constructs. Therefore, the scales in the model achieve the value of discrimination (Fornell & Larcker, 1981).

Table 2 Results of EFA analysis

Factors	Factor loadings							
Effective communication	EC1	0.774						
	EC2	0.789						
	EC3	0.913						
	EC4	0.967						
Farmers' profit	FP1		0.728					
	FP2		0.893					
	FP3		0.796					
	FP5		0.889					
Power asymmetry	PA1			0.858				
	PA2			0.825				
	PA3			0.884				
	PP4			0.776				
Relationship continuity intention	CI1				0.674			
	CI2				0.774			
	CI3				0.837			
	CI4				0.835			
Relationship quality	RQ1					0.705		
	RQ2					0.949		
	RQ3					0.609		
	RQ4					0.938		
Perceived price	PP1						0.676	
	PP2						0.714	
	PP3						0.713	
	PP4						0.850	
Collaboration	CN1							0.854
	CN2							0.912
	CN3							0.725
Profit and risk sharing	RS1							0.838
	RS2							0.939
	RS3							0.824
Eigenvalues		9.154	3.968	2.499	2.135	1.835	1.672	1.347	1.077
Cumulative variance = 71.725%		29.603	12.404	7.343	6.151	5.155	4.761	3.609	2.700

Source Survey data

Table 3 Results of convergent and discriminant validity test

Component scales	CR	AVE	MSV
Collaboration (CN)	0.912	0.776	0.490
Perceived price (PP)	0.833	0.556	0.195
Profit and risk sharing (RS)	0.903	0.758	0.183
Power asymmetry (PA)	0.911	0.721	0.299
Effective communication (EC)	0.920	0.742	0.046
Relationship quality (RQ)	0.895	0.683	0.231
Relationship continuity intention (CI)	0.881	0.650	0.490
Farmers' profit (FP)	0.901	0.695	0.187

Source Survey data

3.4 Structural Equation Modeling Analysis and Hypothesis Test

SEM was performed to determine the prefixes of relationship quality and their influence on the relationship. SEM conducts an analysis of the initially proposed research model after having the appropriate CFA results. The SEM analysis indicators confirm the theoretical model's statistically significant fit (df = 388, chi-square = 680.492, CMIN/df = 1.754 < 3). The estimated parameters of the factors affecting the relationship quality include: perceived price factor is 0.26; effective communication is 0.23; profit and risk sharing factor is 0.18; collaboration factor is 0.17; power asymmetry factor is − 0.31. At the same time, the suffixes of the relationship quality are the farmer's profit factor with the estimated parameter of 0.46 and the intention to maintain the relationship with the estimated parameter of 0.45 (Fig. 1).

The results show that 48% of the variance of relationship quality is explained by the five independent variables in the above model. In addition, the P-value of the estimated parameters in the SEM model is less than the significance level of 5%. Therefore, seven hypotheses are accepted in this study. The Bootstrap method was used with a large number of observations (including 500 random observations). It involves repeated resampling of an original dataset to verify the reliability of the estimated parameters (Schumacker & Lomax, 2004). The Bootstrap method evaluates the estimates in the model with a confidence level of 95%. The results show that the SE-Bias of the estimators is less than 0.05. Thus, these results confirm the reliability of the estimates in the model.

4 Discussions

The findings can be better explained by incorporating the contexts of practice. In Vietnam, agricultural transactions are done through the spot market. Growers are
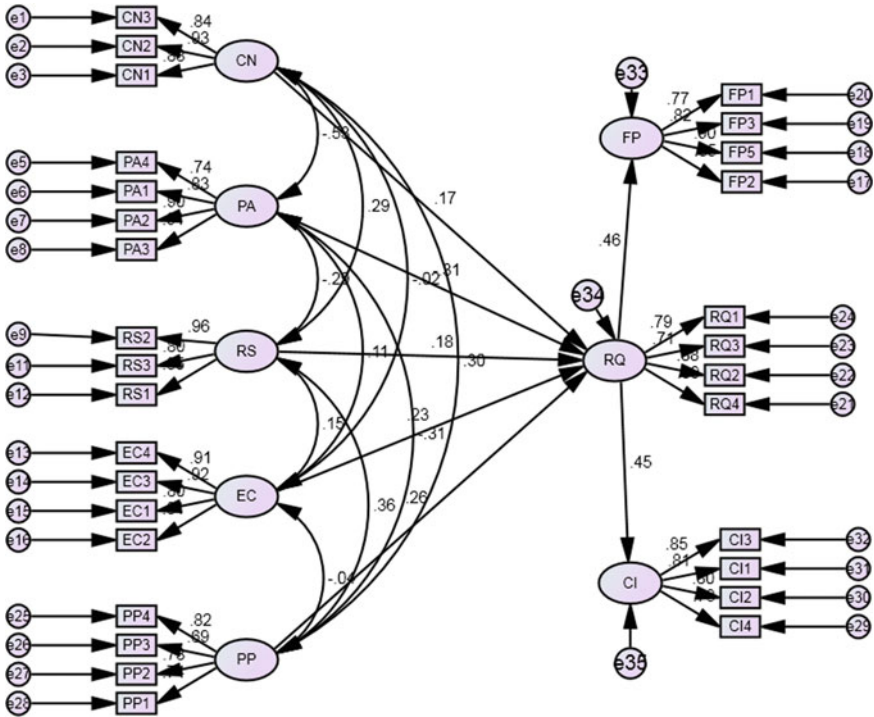
Fig. 1 Factors affecting relationship quality (*Source* Survey data)

easily attracted to buyers who offer reasonable prices. Farmers often compare the price received with the price that neighboring households sell to others. Farmers have desire to continue future transactions when they are satisfied with the price received from the processors and exporters. In addition, sustainable business relationships are enabled and enhanced through communication, which can be seen as formal and informal information sharing among chain stakeholders. Communication can be defined as the catalyst that keeps partners together. Enterprises share difficulties with farmers to help reduce uncertainty through the exchange of information on markets and production techniques.

Profit and risk sharing is an effective measure to control volatility in the market and improve exchange efficiency. Farmers will join with buyers interested in sharing profits and risks with them. Farmers are supported when crop yields are low or market prices are high. Therefore, transactions between coffee farmers and processing and export enterprises are driven by profit and risk sharing factor. Next, the cooperation is used as a basis for deciding future actions with the trading partner. Farmers cooperate directly with partners by establishing regular contacts. Thus, active cooperation reduces the probability of switching to another buyer. In fact, good relationships can

survive when conflicts are resolved. Furthermore, the cooperation in business relationships primarily enhances (directly and indirectly) trust and stability. Therefore, it is clear that building trust in a business relationship is based on active cooperation.

Power asymmetry leads to unfairness in transactions, reducing the motivation for cooperation between parties. As a result, power asymmetries can reduce trust and commitment, damaging relationship quality between farmers and enterprises. Relationship quality can be negatively affected by abusing stronger market positions. Finally, the motivation to improve the relationship between farmers and coffee buyers is beneficial for the farmers. In other words, the business performance of the stakeholders is improved through the relationship. Long-term relationships are more profitable while boosting efficiency, productivity, and performance.

5 Conclusions

The study identifies determinants of the perceived relationship quality based on TCE theory. Relationship quality contributes to stabilizing coffee production in the Central Highlands. The relationship between farmers and businesses helps farmers raise their income. Processors and exporters are vital actors, enabling farmers to optimize coffee production in the Central Highlands. The study identifies five factors that influence relationship quality in the agricultural supply chain, including collaboration, profit and risk sharing, perceived price, effective communication, and power asymmetry. The perceived price factor plays the most important role, followed by effective communication. Power asymmetry is a major cause of relationship entanglement. The study also demonstrates the impact of relationship quality on profitability and intention to continue trading between coffee farmers and processing and export enterprises.

In fact, the relationship between stakeholders is not well established in the agricultural supply chain due to the lack of transparency and mutual information sharing. Policymakers should develop programs to encourage linkages and ensure legal requirements for the relationship between coffee farmers and enterprises. This study has a small sample size (171 households) and only identifies a few factors affecting the quality relationship between coffee farmers and processing and export enterprises. Many other factors were not included in this study. Future studies may consider the relationship quality with a larger sample size and use the perspectives of both sides (including farmers and buyers).

Appendix A

See Table 4.

Table 4 Interpretation of observed variables in the research model

Sign	Items	Factors
RQ1	You can trust the buyer	Relationship quality (RQ)
RQ2	You are satisfied with the transaction with the buyer	
RQ3	The relationship with the buyer meets your expectations	
RQ4	The buyer does not violate the contract/agreement/commitment with you	
CN1	The buyer can handle your inquiries	Collaboration (CN)
CN2	The buyer cooperates in solving problems with you	
CN3	There is good cooperation between the buyer and you	
PP1	Purchasing price is commensurate with coffee quality	Perceived price (PP)
PP2	Purchasing price of the buyer is reasonable	
PP3	Coffee sold to the buyer is always at good prices	
PP4	The buyer's price does not fluctuate	
RS1	The buyer is willing to share the risk with you	Profit and risk sharing (RS)
RS2	The buyer is willing to share difficulties in production and consumption	
RS3	The buyer is willing to pay more when the market price increases	
PA1	The buyer is very powerful in the relationship	Power asymmetry (PA)
PA2	The buyer controls all the information in the relationship	
PA3	The buyer has a strong influence on you	
PA4	You must follow the requirements of the buyer	
EC1	The buyer provides information about market movements for you	Effective communication (EC)
EC2	You can easily contact the buyer	
EC3	You have regular contact with the buyer	
EC4	The information provided by the buyer is timely and reliable	
CI1	You will continue to sell coffee to the buyer	Relationship continuity intention (CI)
CI2	Your relationship with the buyer is long-lasting	

(continued)

Sign	Items	Factors
CI3	You will continue to maintain a long-term relationship with the buyer	
CI4	You will introduce the buyer to other households	
FP1	Building relationships with buyers helps improve economic efficiency	Farmers' profit (FP)
FP2	A good relationship with the buyer makes coffee easy to sell, as expected	
FP3	Selling coffee to the buyer helps farmers have a more stable income	
FP5	The relationship creates the linkage between production and consumption	

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