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Eurasian Business Perspectives

Proceedings of the 23rd Eurasia Business and Economics Society Conference

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The authors of individual papers are responsible for technical, content, and linguistic correctness.

Preface

This is the Volume 2—*Eurasian Business Perspectives* of the 13th issue of the Springer's series *Eurasian Studies in Business and Economics*, which is the official book series of the Eurasia Business and Economics Society (EBES, www.ebesweb. org). This issue includes selected papers presented at the 23th EBES Conference—Madrid that was held on September 27–29, 2017, at the Faculty of Economics and Business, Universidad Complutense de Madrid in Madrid, Spain.

Distinguished colleague Giuseppe Ciccarone from Sapienza University of Rome, Italy, joined the conference as keynote speaker. During the conference, participants had many productive discussions and exchanges that contributed to the success of the conference where 301 papers by 519 colleagues from 53 countries were presented. In addition to publication opportunities in EBES journals (*Eurasian Business Review* and *Eurasian Economic Review*, which are also published by Springer), conference participants were given the opportunity to submit their full papers for this issue.

Theoretical and empirical papers in the series cover diverse areas of business, economics, and finance from many different countries, providing a valuable opportunity to researchers, professionals, and students to catch up with the most recent studies in a diverse set of fields across many countries and regions.

The aim of the EBES conferences is to bring together scientists from business, finance, and economics fields, attract original research papers, and provide them with publication opportunities. Each issue of *the Eurasian Studies in Business and Economics* covers a wide variety of topics from business and economics and provides empirical results from many different countries and regions that are less investigated in the existing literature. All accepted papers for the issue went through a peer review process and benefited from the comments made during the conference as well. The current issue covers fields such as entrepreneurship, human resources, management, and marketing.

Although the papers in this issue may provide empirical results for a specific county or regions, we believe that the readers would have an opportunity to catch up with the most recent studies in a diverse set of fields across many countries and

regions and empirical support for the existing literature. In addition, the findings from these papers could be valid for similar economies or regions.

On behalf of the series editors, volume editors, and EBES officers, I would like to thank all presenters, participants, board members, and the keynote speaker, and we are looking forward to seeing you at the upcoming EBES conferences.

Istanbul, Turkey   Ender Demir

Eurasia Business and Economics Society (EBES)

EBES is a scholarly association for scholars involved in the practice and study of economics, finance, and business worldwide. EBES was founded in 2008 with the purpose of not only promoting academic research in the field of business and economics but also encouraging the intellectual development of scholars. In spite of the term "Eurasia," the scope should be understood in its broadest terms as having a global emphasis.

EBES aims to bring worldwide researchers and professionals together through organizing conferences and publishing academic journals and increase economics, finance, and business knowledge through academic discussions. Any scholar or professional interested in economics, finance, and business is welcome to attend EBES conferences. Since our first conference in 2009, around *11,157* colleagues from *98* countries have joined our conferences and *6379* academic papers have been presented. **EBES has reached 2050 members from 84 countries.**

Since 2011, EBES has been publishing two journals. One of those journals, ***Eurasian Business Review—EABR***, is in the fields of industrial organization, innovation, and management science, and the other one, ***Eurasian Economic Review—EAER***, is in the fields of applied macroeconomics and finance. Both journals are published quarterly by ***Springer*** and indexed in ***Scopus***. In addition, EAER is indexed in the ***Emerging Sources Citation Index*** (*Clarivate Analytics*) and EABR is indexed in the ***Social Science Citation Index (SSCI)***.

Furthermore, since 2014 Springer has started to publish a new conference proceedings series (*Eurasian Studies in Business and Economics)* which includes selected papers from the EBES conferences. The 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, and 20th (Vol. 2) EBES Conference Proceedings have already been accepted for inclusion in the ***Conference Proceedings Citation Index - Social Science & Humanities (CPCI-SSH)***. The 20th (Vol. 1), 21st, and subsequent conference proceedings are in progress.

We look forward to seeing you at our forthcoming conferences. We very much welcome your comments and suggestions in order to improve our future events. Our success is only possible with your valuable feedback and support!

With my very best wishes,

Klaus F. Zimmermann
President

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Part I
Human Resources

Employer Brand and Hospitality Services: Theoretical Overview

Indre Sciukauske

Abstract The hospitality industry is often characterized as a low-wage, low-skill, antisocial working time, and it contributes to the poor reputation of the employer. This leads to the global difficulties of recruitment in this industry and aim of this chapter is to expose how the use of the employer brand can help hospitality services providers to change this and to ensure a positive guest experience. Also focus on employees in the field of hospitality when making solutions that are useful to the organization is gaining increasing importance in the context that contact persons involved both during, after the provision of this service, and at the time of placing it, can affect the customer's decision to buy or not to buy a service, to become loyal, and exactly employer brand allows organization to attract and retain the right employees. Thus, this theoretical overview of the impact of the employer's brand on the provision of these services is relevant and important for hospitality service organizations as an opportunity to discover new ways to manage and address the specific challenges of this industry. The chapter reveals the concept of the employer brand, hospitality and hospitality services and the interconnections.

Keywords Employer · Employer brand · Hospitality · Services · Relation

1 Introduction

Already in ancient times, the Greek "xenia" (guest, friendship) and the Roman "hospitium" (hospitality) as well as the beginning of merchant travel, were rudiments of hospitality, which in these days have become a major contribution to the service sector of individual countries and the world economy. It covers not only accommodation, catering, leisure, recreation, and other services, but also features a country and its people. The concept of hospitality itself is inseparable from the

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people, and the attitude of the people who are working and who create these workplaces in this sector can determine whether the guests (including locals) will return not only to the service organization but also to that country.

This hospitality sector is also faced with other challenges. The hospitality industry is often characterized as a low-wage, low-skill, antisocial working time, low learning opportunities and a limited career advancement industry, which contributes to tense stressful working conditions, frequent employee turnover, and poor employer reputation (Sobaih 2015). This determines the global recruitment difficulties in this industry, which is dominated by casual employees (i.e., temporary and part-time employees), and they may not be interested in long-term careers (Sobaih 2011). Therefore, these, as well as the shortage of employees due to emigration and globalization, can be solved by the employer brand concept adaptation as strategy in the hospitality sector. An employer brand for a company as an organization helps during recession and helps to stay in a competitive market, brings the image of the entire company, highlights the organization's commitment to the brand and is financially viable. It is also worth mentioning that the adaptation of the employer's brand concept is important not only for the organization as an employer in the context of human resource management by attracting and retaining employees, but also from the management perspective as a profit-making organization for the possibility of using this concept as a strategy to attract and retain loyal customers, and not just employees. A client, knowing about inappropriate working conditions in an organization, may not choose this organization as a provider of hospitality services, thus losing potential clients, forming an unfavorable service brand for a hospitality organization.

2 The Employer Brand: The Concept and the Strategy

Although nearly 30 years have elapsed since Ambler and Barrow, for the first time in 1996 mentioned the concept of an employer brand, this concept has not yet been purified, due to the existing similarities and differences between the traditional brand, the corporate brand, and the employer brand theories. They described the employer brand as a functional, economic, and psychological benefit package provided by the work and considered that the employer brand has personality and positioning as well as the traditional brand (Ambler and Barrow 1996). Davies (2008) also argued that traditional trademark features, such as the ability to differentiate, build loyalty, satisfaction, and develop emotional attachment, are also characteristic of the employer's brand. Tuzuner and Yuksel (2009) also endorsed this approach and added that employer branding is part of internal marketing and is still a concept that needs to be developed to determine which aspects make the company attractive to its current or future employees.

The most obvious aspect of these closely related theories is that the traditional brand management objectives and techniques used are translated into a higher level. The product brand/service brand is not the only brands of organization, but

the entire organization also has to manage it's employer brand. The main objective of traditional marketing is to achieve a competitive similarity in the consumer market, when by employer brand's—in the labor market (Schlager et al. 2011; Mosley 2014).

It is also worth mentioning that employer brand benefits also include talent success (Singh and Sharma 2013), due to the loyalty of employees in companies with the employer brand, consumer satisfaction and financial indicators, such as growth margins, sales, shareholder profits and stocks value, are increasing (Barrow and Mosley 2006). As it is clear, the researchers focus on different aspects when examining the employer brand and this branding theory.

As can be seen in Table 1, interpretations of the employer brand are usually related to the positive image of the employer, but other researchers also point out that the development of identity and the whole process involves stakeholders in whose mind organization seeks to form a unique, excellent organization as an employer opinion. Martin et al. (2011) confirm this, describing it as a generalized recognition to be known among key stakeholders as offering high-quality recruitment experience and a distinctive organizational identity that employees value, engage with it and feel confident and happy to encourage others. Another scholar, Mosley (2014, p. 4), summarizes the employer's brand concept and states that it is defined "as a promise; as desirable image and reputation"; and as "the whole spectrum of thoughts and feelings that people associate with the employer, both positive and negative, both true and false, clear and impressionistic, whether they are based on direct experience, intentional or unintentional communication, hearing." In this context, each employer has an employer brand, regardless of whether he/she has defined the features and image that can be linked (Mosley 2014). All these definitions show the importance of managing it properly and that strategic steps should be taken by managers.

The strategic aspect of this concept was discussed by Aldousari et al. (2017) who have found that a well-developed employer brand strategy has an impact on orga-nizational productivity: companies with well-developed strategies have better per-formance outcomes than companies without strategy or only partially developed. Among the organizational factors that have a significant effect on mediation are profitability, communication, and leadership, and the effect on productivity is seen through the following results:

1. Sufficient recruitment of new applicants.
2. Recruitment of applicants with the right skills and abilities.
3. Work–life satisfaction and organizational commitment.
4. Voluntary reduction of employee turnover.
5. Increased productivity of employees.
6. Enabling employees to provide quality products and services (Aldousari et al. 2017).

Also, Martin et al. (2011) point out that employer branding is a process in which branding, marketing, communication, and human resource techniques are tailored to create an employer's brand. A good employer brand requires good cooperation across all organizational functions (Gehrels and de Looij 2011). Hence, the design and implementation of an employer's brand embraces not only the concept of the

Table 1 The definitions and interpretations of employer brand

Authors	Definition
Ambler and Barrow (1996)	The package of functional, economical, and psychological benefits provided by employment, and identified with the employing company
Ewing et al. (2002)	Building an image in the minds of the potential labor market, that the company above all others, is a great place to work
Lloyd (2002)	The sum of a company's efforts to communicate in Berthon et al., to existing and prospective staff that it is a desirable place to work
Backaus and Tikoo (2004)	"Process of building an identifiable and unique employer identity... concept of the firm that differentiates it from its competitors"
Knox and Freeman (2006)	Image associated with an organization, uniquely in its role as an employ
Grunewalder (2008)	Employer branding is the process, when employer image "great place to work" is put the minds of target groups
Rosethorn (2009)	Employer brand is both deal of organization and its people. Employer branding is the art to articulate this deal in a way that is distinctive, compelling and relevant to individual, and that would be ensuring through all employees' work cycle at the organization
Kimpakom and Tocquer (2009)	An organization's image as seen through the eyes of its actual and potential employees
Srivastava and Bhatnagar (2010)	Employer brand is about giving an identity, image, and distinctiveness to the organization as an employer in order to attract its prospective employees and to motivate, engage, and retain its current employees
McLeod and Waldman (2011)	Employer brand—it is perception of organization as a good place to work in the eyes of current, potential, and external people
Shiwaji and Shivashankar (2013)	Employer branding is a targeted long-term management strategy, awareness and perception of employees, potential employees and related stakeholders
Malati and Seghal (2013)	It helps to differentiate the company from its competitors as an employer
The UK's Chartered Institute of Personnel and Development (CIPD) (2008)	A set of attributes and qualities—often intangible—that makes the organization unique, promising a certain amount of work experience and appealing to those who are thriving and best performing in her culture
Minchington (2006)	Organizations image as a "great place to work"

Source: Source for Rows 1 through 5: Srivastava and Bhatnagar (2010) and author's own study

brand, but also other organizational units, and in order to use successfully the employer brand benefits, organizations must integrate the activities of different departments. Shiwaji and Shivashankar (2013) described this as a targeted long-term managerial strategy, while Mosley (2014) specifically points out that the employer's brand strategy is in the middle of a human resource management strategy and marketing strategy, and right after a corporation/business strategy. This is because, according to this scientist, the employer's brand strategy must be consistent with all three, to support the talents needed to ensure the organization's competitive edge, as well as reflect the organization's and customer's brand promises and ambitions in the company.

An organization should not focus solely on the customer's brand, but should ensure that the organization's three brands (goods/services, corporations, and employers) are interlinked (Minchington 2006). An employer's brand is becoming increasingly important in research and practice in multinationals, as it directly relates to corporate reputation, talent management, and employee engagement (Martin et al. 2011). An integrated brand model presented by Gehrell and de Looij (2011) shows three branded proposals that the organization should manage: employer brand, customer brand and corporate brand. The employer brand consists of employer brand reputation, which leads to attractiveness for outsiders as well as internal identification with brand, which leads to talent commitment and retention. All these benefits, according to the authors, show the employer brand effectiveness, which leads to organizational performance and impacts organizational culture. All three brand proposals are created in the organizational culture and this means that indirectly employer brand impacts whole organizations performance.

According to Moroko and Uncles (2008), there are two main dimensions of a successful/unsuccessful employer's brand: accuracy and attractiveness. The latter is consistent with the user/corporate brand—to be known and noticeable, to be relevant and resonant, to stand out from direct competitors, and the interaction between employee engagement and the attractiveness of the company itself, according to these authors, is the work of human resources management and marketing departments. The attraction and retention of the "best" employees also means that these employees will pass on the promise of the brand and will meet the expectations of customers, increase their satisfaction and likely loyalty, which will encourage revenue growth and profitability (Moroko and Uncles 2016). The best employees' behavior is consistent, which ensures the fulfillment of customer expectations, which enhances corporate reputation and maintains customers.

These scientists also relied on McDonald et al. (2001) and de Chernatony et al. (2003) who argued that employees had the opportunity to create strong and long-lasting brands, especially in the service sector, and argued that employees were recognized as a successful player in brand management. Satisfied and loyal staff communicate with one another and between teams more positively, loyalty increases, which results in better employee retention, as well as the transfer of positive work experience to potential employees (Moroko and Uncles 2016). Hence, an employer brand strategy can be considered as a strategy that combines the activities of human resources and marketing departments and is tied to the

strategy of the entire organization, the effect of its use is visible both at the external and internal levels of the organization and helps to solve problems related to employees who already as mentioned above is particularly relevant in the hospitality sector.

3 Hospitality Services and Contact Employees

According to the Oxford Dictionary, hospitality is "friendly and generous behavior with guests" and "food, beverages or services provided by organizations to their guests, clients, and so on" (Oxford Dictionary 2016). The friendly, welcoming, and generous treatment of guests is the essence of hospitality (Pezzotti 2011). This relates to the reception and leisure time of travelers, how they are treated with all the welfare and satisfaction of the traveler (Mok et al. 2001). Another distinctive feature of hospitality services is that the users or customers of these services, as already mentioned in the Oxford Hospitality Definition, are called guests. According to Pezzotti (2011), hospitality clients are named not as clients but as guests because the client is welcoming rather than a guest and is more oriented as a financial transaction when the word "visitor" brings all hospitality dimensions (Pezzotti 2011). This scientist states that the goal is to create a difference from the outside world, a stress-reducing, warm environment, and provide a timely, relevant, targeted, and professional service, as well as that hospitality and services are both different and related: hospitality is a strategy, and services are its tactics.

Hospitality and services must work together and synchronously, as this will only achieve the overall experience of the guest and, therefore, improvement of services and operations must be based on hospitality (Pezzotti 2011). This is confirmed by Barrow et al. (2012) who claim that "Zero Defects" is the goal that the company seeks to create by its own systems, but what should be included in the "zero defects" depends on the company's goals and customer's expectations. This is the reason hospitality services companies develops standards: they aim to create consistency, eliminate mistakes, and to manage customer expectations from inside.

The certain types of hospitality services are distinguished: electronic-mechanical, indirect personal, and transaction face-to-face. As the fact of the service itself happens only during its transaction, the guest's experience depends first on the contact person. There are two main aspects of personal service: the task that requires technical competence and the personal interaction between the guest and the service provider (employee), which can be described as a helpful and friendly approach (Barrow et al. 2012). The service is a technical procedure for doing a work (task), and a hospitality service is a transaction where the service emphasizes what is being done and hospitality personalizes as it is done (Pezzotti 2011). Hence, the interpersonal dimension in the services of hospitality is central to the competitive advantage of the service, since competitors can meet the aspect of the task, but only a person will provide some different experience.

An appropriate interpersonal aspect can only be provided by an employee with a helping skill, and the competences are required for a professional service deliver. Also, the service sector requires human resources be aligned with their specialized service behavior and with the values of their clients, and that employees should act consistently in serving their customers as they deliver brand promises to their customers (Chang and Ma 2015). Employees (because of unique hospitality environment) create a true relationship that is different from other services (Kandampully et al. 2014). This means that in the hospitality services a lot of attention must be paid to the contact staff because of their continuous involvement in the provision of services, the creation of the brand service through the transfer of promise, the creation of unique relationships and this can be done only by the helping and professional employees.

4   The Relations Between Employer Brand and Hospitality Services

Interpersonal factors are often more important than operational factors, and recruited and satisfied employees are more likely to provide a positive service experience (Mosley 2014). One of the biggest challenges in the hospitality industry is finding and retaining of good employees to be motivated (Walker and Miller 2009). According Gehrels and de Looij (2011) work in the hospitality industry has become a student job, although specialists are needed in this area. Consequently, the development of an appropriate strategy to ensure the coordination of the identification and maintenance of both suitable employee, the provision of their standardized services with zero defects, behavior and the provision of good guest emotions and experience is a major challenge.

Barrow et al. (2012) point out that in the hospitality industry, and in particular in the accommodation sector, employees both directly and indirectly affect the quality of the services provided, and therefore decide how to attract and retain the best of the best work power and become an employer of choice. The attitude toward the employee as an internal client is related to the continuous improvement of the highest quality of service for the client. The difference in quality of service depends on the individual - their power to provide hospitality and service (Pezzotti 2011). Lashley (2008) states that the emotional dimension of hospitality makes a host–guest relationship more than a normal collision of service. The guests appreciate the full experience, considering the feelings they encounter in their various meetings with frontline staff and executives, as well as other staff attending the entire visit. Understanding these emotional dimensions raises concerns about emotional work done by contact employees and the conditions required to eliminate negative effects and create emotional excitement. Frontline staff hosts guests and can create positive guest emotions and experiences that make customers loyal, because they have an emotional attachment to the company or destination (Lashley 2008). All it shows is

that helping and professional employees are the main vehicle for achieving customer expectations, considering that the emotional environment in the hospitality services is more important and varies more frequently than physical environment.

According to Erkmen and Hancer (2015), hospitality staff are required to present the service brand through brand supportive behavior during customer interaction. People who interact with customers are the main difference for guest experiences. Because all hospitality organizations offer almost similar tangible offers such as hotel rooms, restaurant meals or airline seats, this makes the experience of the guests unique and offers a competitive edge (Erkmen and Hancer 2015). Also, they state that hospitality employees contribute to brand success through their behavior and employer brand helps organizations improve the brand-related behavior of their employees in order to ensure long-term relationships not only with clients but also with their employees working in intensive work and high-level customer contact with the industry. As the employer branding allows to attract right employees, retain and develop a psychological contract with them, it can be argued that the employer's brand affects the brand of hospitality services through employee and it can be used as strategy. According to Schlager et al. (2011), the employer brand has not yet been proven to be important to service brands, and argue that a strong employer brand is an effective tool that promotes and increases employee performance in such a way that they in turn have a positive impact on customer experience and thus indirectly affect service brand: employee satisfaction and identity with the organization positively affects the experience of clients and helps to create the service brand, while the long-term creation of a consistent service brand is ensured also taking into account potential employees.

A strategic aspect of marketing management is also highlighted by Baker and Magnini (2016), which combined the services marketing triangle and strategic marketing planning, implementation, and control systems into the composite model of hospitality marketing, where frontline service provider is the most important employee and can be managed through internal marketing. According to the authors, who rely on Akroush et al.'s (2013) statement that internal marketing is vital to the hospitality industry, state that dual communication between the frontline staff and management is essential to their ability and motivation to ensure customer satisfaction through internal marketing activities. Interactive marketing for hospitality involves preparing the service environment and frontline service provider for the highest level of interaction, and therefore, latter marketing activities must be incorporated into hospitality marketing (Baker and Magnini 2016). According to these researchers, hospitality management is different from other services due to the high proportion of frontline staff interaction, which still requires a lot of hospitality. Hence, the management of hospitality services requires new tools to ensure that interactions between employees and clients are conducted smoothly and create a positive experience. This can be done by using the employer brand strategy, and Fig. 1 is theoretical model of the employer brand impact on hospitality services, which illustrates its effects.

Since the employer brand is understood as a management strategy, it can be used in both external and internal ways. In conjunction with internal marketing activities,
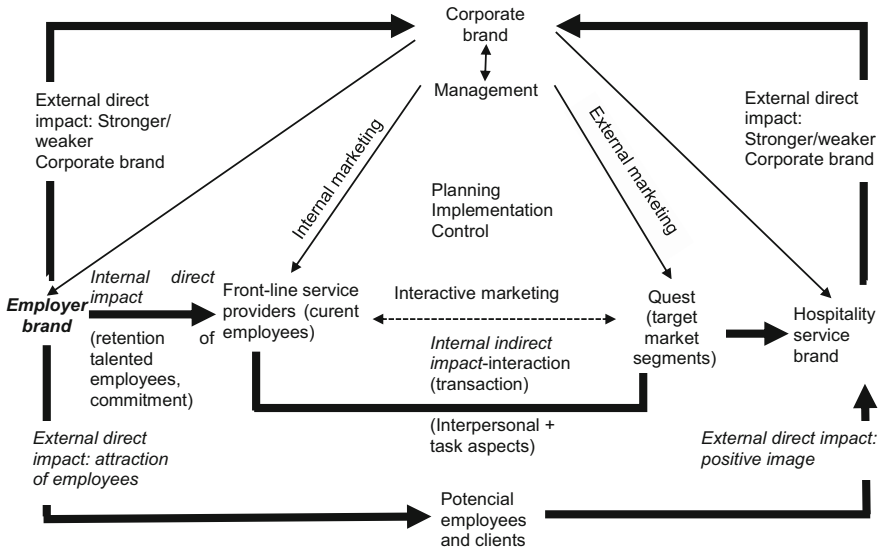
Fig. 1 The theoretical model of the employer brand impact on hospitality services. Source: Based on Baker and Magnini (2016) and author's own study

it can impact the frontline service provider in his interaction with target market segment's customer (quest) and indirect way impacts hospitality service brand. As internal direct impact is the retention of suitable employees (Cascio 2014), the attractiveness of the employer (Maxwell and Knox 2009), satisfaction and commitment of the employee. Also, due to consistent employee behavior that can be guaranteed by a strong employer brand (Moroko and Uncles 2016), the service transaction or otherwise the frontline service provider's professional interaction with the quest through appropriate interpersonal and task aspects in the hospitality services (Barrow et al. 2012) can have an indirect effect on the image and reputation of the hospitality service brand and its loyalty.

Most often, the employer brand is discussed as the tool to impact potential employees (Rampl 2014), explaining what values they value most (Berthon et al. 2005; Schlager et al. 2011; Sengupta et al. 2015) and the attributes that determine their candidacy to the proposed vacancy (Knox and Freeman 2006). Only from many potential candidates the hospitality organization can choose most suitable employees with helping and professional skills. As a potential employee can be a potential client and vice versa, the resulting external image will determine both the number of candidates for the job and the number of clients who decide to use the services of exactly that hospitality organization, because of its image as good employer.

Since the employer brand, as well as the product/service brand, is part of the organization's corporate brand, negative or positive associations associated with mentioned brands will have a corresponding external impact on the corporate brand: according to Moroko and Uncles (2016), it can strengthen or weaken it. It means that through management of all three brands, organization can achieve its goals.

Hence, further investigation and research of the employer brand is particularly relevant in the hospitality business since the frontline employee can determine the competitive advantage of the organization's services: it is easier to "manage" the employee precisely because of the use of an integrated employer's brand strategy; also external impacts for corporate brand through employer brand perspectives should be discussed and researched as well as connections with employer brand and internal marketing activities.

5   Conclusions

Although employer's brand strategy is not a new strategy, potential using of it is not fully explored. The hospitality sector is precisely the niche that faces a persistent shortage of employees as well as their turnover, and this can be solved by a new way combining both human resources and marketing strategies.

As a result of the employer's brand strategy, such as attracting and retaining suitable employees, the use of this strategy can also have an impact on the service brand because of the frontline personnel's right and consistent behavior and attitude to both the hospitality and the guest. Due to the specificity of hospitality services (where professionalism and hospitable attitude are relevant), the contact person is the main person who generates and transmits a brand message of the hospitality service, and thereby strengthens the service brand. This means that the organization must ensure a proper message from the employer's brand, so that by attracting, retaining, and motivating the employee, they are able and willing to convey a certain message of the hospitality service brand and thus create a competitive advantage in such way.

As the employer brand affects not only the service brand, but also the corporate brand, management of all three brands should be strategic and cover all organization's departments in order for the organization to achieve its goals. The organization is more attractive as service provider, employment place or partner when all type brand messages create positive image.

References

Akroush, M. N., Abu-ElSamen, A. A., Samawi, G. A., & Odetallah, A. L. (2013). Internal marketing and service quality in restaurants. *Marketing Intelligence & Planning, 31*(4), 304–336.

Aldousari, A. A., Robertson, A., Yajid, M. S. A., & Ahmed, Z. U. (2017). Impact of employer branding on organization's performance. *Journal of Transnational Management, 22*(3), 153–170.

Ambler, T., & Barrow, S. (1996). The employer brand. *Journal of Brand Management, 4*(3), 185–206.

Backaus, K., & Tikoo, S. (2004). Conceptualizing and researching employer branding. *Career Development International, 9*(5), 501–517.

Baker, M. A., & Magnini, V. P. (2016). The evolution of services marketing, hospitality marketing and building the constituency model for hospitality marketing. *International Journal of Contemporary Hospitality Management, 28*(8), 1510–1515.

Barrow, S., & Mosley, R. (2006). *The employer brand: Bringing the best of brand management to people at work*. Chichester: Wiley.

Barrow, C. W., Powers, T., & Reynolds, D. R. (2012). *Introduction to management in the hospitality industry* (10th ed.). New Jersey: Wiley.

Berthon, P., Ewing, M., & Hah, L. L. (2005). Captivating company: Dimensions of attractiveness in employer branding. *International Journal of Advertising, 24*(2), 151–172.

Cascio, W. F. (2014). Leveraging employer branding, performance management and human resource development to enhance employee retention. *Human Resource Development International, 17*(2), 121–128.

Chang, H., & Ma, C. (2015). Managing the service brand value of the hotel industry in an emerging market. *International Journal of Hospitality Management, 47*, 1–13.

Davies, G. (2008). Employer branding and its influence on managers. *European Journal of Marketing, 42*(5–6), 667–681.

De Chernatony, L., Drury, S., & Segal-Horn, S. (2003). Building the services brand: Stages, people and orientations. *The Service Industries Journal, 23*(3), 1–21.

Erkmen, E., & Hancer, M. (2015). Do your internal branding efforts measure up? Consumers' response to brand supporting behaviors of hospitality employees. *International Journal of Contemporary Hospitality Management, 27*(5), 878–895.

Ewing, M. T., Pitt, L. F., de Bussy, N. M., & Berthon, P. (2002). Employment branding in the knowledge economy. *International Journal of Advertising, 21*(1), 3–22.

Gehrels, S. A., & de Looij, J. (2011). Employer branding: A new approach for the hospitality industry. *Research in Hospitality Management, 1*(1), 43–52.

Grunewalder, A. (2008). *Employer branding. Marketing the company as an attractive employer*. Seminar paper. Norderstedt: Druck und Bindung: Books on demand Gmbh.

Kandampully, J., Keating, B. W., Kim, B. P., Mattila, A. S., & Solnet, D. (2014). Service research in the hospitality literature insights from a systematic review. *Cornell Hospitality Quarterly, 55*(3), 287–299.

Kimpakom, N., & Tocquer, G. (2009). Employees' commitment to brands in the service sector: Luxury Hotel Chains in Thailand. *Journal of Brand Management, 16*(89), 532–544.

Knox, S., & Freeman, C. (2006). Measuring and managing employer brand image in the service industry. *Journal of Marketing Management, 22*(7–8), 695–716.

Lashley, C. (2008). Marketing hospitality and tourism experiences. In H. Oh & A. Pizam (Eds.), *Handbook of hospitality marketing management* (pp. 3–31). Oxford: Butterworth-Heinemann.

Lloyd, S. (2002). Branding from the inside out. *BRW, 24*(10), 64–66.

Malati, N., & Seghal, K. (2013). Employer branding: A potent organizational tool for enhancing competitive advantage. *The IUPJournal of Brand Management, 10*(1), 51–66.

Martin, G., Gollan, P. J., & Grigg, K. (2011). Is there a bigger and better future for employer branding? Facing up to innovation, corporate reputations and wicked problems in SHRM. *The International Journal of Human Resource Management, 22*(17), 3618–3637.

Maxwell, R., & Knox, S. (2009). Motivating employees to "live the brand": A comparative case study of employer brand attractiveness within the firm. *Journal of Marketing Management, 25*(9–10), 893–907.

McDonald, M. H. B., de Chernatony, L., & Harris, F. (2001). Corporate marketing and service brands – Moving beyond the fast-moving consumer goods model. *European Journal of Marketing, 35*(3–4), 335–352.

McLeod, Ch., & Waldman, J. (2011). *The HR Trailblazer: Unlock the potential of your employer brand*. Kindle ed. eBookIt.com

Minchington, B. (2006). *Your employer brand – Attract, engage, retain*. Torrensville: Collective Learning Australia.

Mok, C., Sparks, B., & Kadampully, J. (2001). *Service quality management in hospitality, tourism, and leisure* (1st ed.). London: Haworth Hospitality Press.

Moroko, L., & Uncles, M. D. (2008). Characteristics of successful employer brands. *Journal of Brand Management, 16*(3), 160–175.

Moroko, L., & Uncles, M. D. (2016). Strategic employer brands: Current domain, future directions. In F. D. Riley, J. Singh, & C. Blankson (Eds.), *The Routledge companion to contemporary brand management* (1st ed., pp. 309–323). Roxon: Routledge.

Mosley, R. (2014). *Employer brand management* (1st ed.). West Sussex: Wiley.

Oxford Dictionary. (2016). Oxford University Press [online]. Accessed September 22, 2017, from http://www.oxfordlearnersdictionaries.com/definition/english/hospitality

Pezzotti, G. (2011). The essence of hospitality and service. In M. C. Sturman & J. B. Corgel (Eds.), *The Cornell school of hotel administration on hospitality: Cutting edge thinking and practice* (1st ed., pp. 5–20). New Jersey: Wiley.

Rampl, L. V. (2014). How to become an employer of choice: Transforming employer brand associations into employer first-choice brands. *Journal of Marketing Management, 30*(13–14), 1486–1504.

Rosethorn, H. (2009). *The employer brand: Keeping faith with the deal* (1st ed.). Surrey: Gower Publishing.

Schlager, T., Bodder, M., Maas, P., & Cachelin, J. L. (2011). The influence of the employer brand on employee attitudes relevant for service branding: An empirical investigation. *Journal of Services Marketing, 25*(7), 497–508.

Sengupta, A., Bamel, U., & Singh, P. (2015). Value proposition framework: Implications for employer branding. *Decision, 42*(3), 307–323.

Shiwaji, W., & Shivashankar, S. (2013). Employer branding: A strategic tool to attract and retain talents in a competitive environment. *Indian Streams Research Journal, 2*(12), 1–4.

Singh, M. K., & Sharma, S. (2013). Employer branding in India: Emerging dimension. *International Journal of Research in Commerce and Management, 4*(2), 70–75.

Sobaih, A. E. E. (2011). *The management of part-time employees in the Restaurant Industry: A case study of the UK restaurant sector*. Saarbrucken: Lap Lambert Academic Publishing GmbH & KG.

Sobaih, A. E. E. (2015). Hospitality employment issues in developing countries: The case of Egypt. *Journal of Human Resources in Hospitality & Tourism, 14*(3), 221–243.

Srivastava, P., & Bhatnagar, J. (2010). Employer brand for talent acquisition: An exploration towards its measurement. *Vision: The Journal of Business Perspective, 14*(1–2), 25–34.

The UK's Chartered Institute of Personnel and Development (CIPD). (2008). *Employer branding. A no-nonsense approach* [online]. Accessed October 22, 2017, from http://www2.cipd.co.uk/NR/rdonlyres/D0AC3CB0-BC5F-44F5-886D-4C00276F2208/0/empbrandguid.pdf

Tuzuner, V. L., & Yuksel, C. A. (2009). Segmenting potential employees according to firm's employer branding concept. *Journal of Academic Research in Economics, 1*(1), 46–61.

Walker, J. R., & Miller, J. E. (2009). *Supervision in the hospitality industry. Leading human resources* (6th ed.). New Jersey: Wiley.

Motivating Employees in Times of Industry 4.0: The Suitability of Classical Motivation Theories Within the Framework of Industry 4.0

Sabrina Romina Sorko and Claudia Brandstätter

Abstract The comprehensive networking and digitization associated with the fourth industrial revolution leads to changes along the entire value chain and requires a holistic change process within the company. This change process affects not only the company itself, but also addresses a wide range of stakeholders. As a particularly important stakeholder group, employees are faced with entirely new challenges. Lifelong learning and continuous professional development will be a prerequisite to survive in the labor market modified by Industry 4.0. Particularly with those employees, who see their job threatened by Industry 4.0, these fears lead to uncertainty and motivation losses. This leads to the question how employees can be motivated in the age of Industry 4.0 and whether classical motivation theories are still valid. In order to answer this question, different motivation theories are analyzed, and the main motivation criteria are worked out and summarized in an overview matrix. Subsequently, the applicability of the classical motivation theories and their measures in the Industry 4.0 process is examined in an empirical survey.

Keywords Motivation theories · Industry 4.0 · Leadership · Digitization

1 Introduction

The fourth industrial revolution (Industry 4.0) will lead to changes for manufacturing companies and their employees in the future. Increasing digitization enables the development and implementation of intelligent systems, which causes more flexible processes within the whole company. Thus, monitoring the production could be done independently of location and time (Kagermann et al. 2013; Bauernhansl et al. 2014). If real productivity increases within the framework of Industry 4.0, it should be realized that the working environment also needs to be redesigned (Frey and

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Osborne 2013; World Economic Forum 2016). Although in discussions around this topic mainly technological possibilities are in the foreground, it is of great relevance to consider the human factor. So the cooperation between employee and machine is becoming ever more intense and their degree of networking will be a decisive factor in the success of a company (World Economic Forum 2016). One important result of this development, especially for existing employees, is the restructuring of the competence areas (Sorko and Kreil 2016). By digitizing, work content, processes and tasks will change. However, the employees should remain the chief of planning, controlling, and dispositive activities (Becker 2015). In future, it will be necessary for the employees not only to network tasks and information. They will have to be able to think organizational and to keep the overview on all processes (Kraft 2016). These changes create on the one hand insecurity among employees and lead to the fear of losing one's job. Nevertheless on the other hand numerous positive changes such as the development of new occupational fields are expected.

Summing up, the following applies: The lower the qualification of the employee, the higher the probability of being replaced by intelligent systems. After implementation of the production potentials of Industry 4.0, fewer employees are needed directly in production with the same equipment. In particular, simple routine tasks can be replaced by automation, and also routine decisions can be performed by intelligent control systems (Hirsch-Kreinsen 2015). Now it has to be considered what impact these findings have especially for employees working on the shop floor. The knowledge of those employees that their jobs are more likely to be digitalized by Industry 4.0 can lead to considerable motivation losses. However, motivated employees are an important resource for companies, because with intrinsic motivation average performance can be achieved, which can have a significant positive impact on the company's success (Mitchell 1984; Thomas 2010). This raises the question of how employees can be motivated in a completely changing environment and whether the prevailing classical motivation theories are still suitable under Industry 4.0. With the help of a qualitative examination, the chapter tries to identify which motivation measures are currently being applied in companies and whether they can usually be assigned to the traditional motivation theories. In the context of the empirical survey, it is examined which motivational measures are planned in relation to Industry 4.0 and which are considered important. Another goal is to find out whether classical motivation theories still play a role within the framework of Industry 4.0.

The chapter is structured as follows: First, the theoretical framework and the literature review analyses the main contributions to the topic of Industry 4.0, as well as an overview of the most classical motivation theories is given. Then we describe the methodology and present main empirical results. In the final section the findings are interpreted and a conclusion is provided.

2 Theoretical Background

The first time the Fourth Industrial Revolution was discussed was in 2011 in Hannover, Germany (Gleich et al. 2016). Accordingly the term Industry 4.0 was created by the German federal government which has developed a buzzword, which is very often used in connection with future developments of companies by now (Gleich et al. 2016). A generally valid definition for Industry 4.0 is not yet available. Nevertheless, this term often refers to the networking of machines through communication tools, which will change the organization and management of the value chain over the entire product life cycle. Apart from improvements in flexibility and added value, the aim is also to individualize products and services through the networking of customers and companies (Yin et al. 2018; Roth 2016). In order to achieve the highest possible degree of individualization, large amounts of customer data are necessary. Through an analysis of this data the request of the customers can be specified precisely and can be used for the production of customer-specific individual products. Thus, an individualization degree to a production size of only one piece is possible (Kraft 2016). Furthermore digitizing the entire lifecycle could be used to minimize the distance between supply and demand. The optimum is the so-called "zero distance," in which innovations are developed close to the customer (Roth 2016).

By merging the virtual with the physical world of manufacturing systems, a self-organizing factory with optimized production flow could be created, in which cyber-physical systems (CPS) are working autonomously and fully automatic: a Smart Factory. A Smart Factory is characterized by being a cloud-based and decentralized manufacturing company. Thus all information is available in real time—by networking all entities involved in value creation process. The ongoing analysis of the process data in real-time results in shorter reaction times as well as optimum resource utilization. Such networks are not only a major technical challenge, but also lead to changes in production and quality management. Ultimately, they affect the entire corporate culture and sales organization (Adamson et al. 2017; Roels 2012; Yin et al. 2018).

An important factor for the success of Industry 4.0 within the company is to adapt the work processes to the new technologies (Kraft 2016). Employees will have to expand or adapt their (digital) competencies due to the increasing level of digitization. For example, at least basic IT skills are required or process responsibility is to be taken over by the employees. Therefore, the willingness to further development and lifelong learning will get more important under Industry 4.0. Employees will have to learn how to think and act in networked and overlapping processes as well as deal with large amounts of data. For the employees, Industry 4.0 is a change in their usual way of working. It leads to many uncertainties and completely new—sometimes temporarily over-demanding—tasks. These factors can easily lead to demotivation. For this reason, HR managers and leaders are facing new challenges of how they can best motivate employees in the framework of Industry 4.0 (Thomas 2010; Sorko et al. 2017).

Whether the classical motivation theories are suitable for this will be discussed in the following chapter. Therefore, the research question was elaborated methodically in a two-step process. Firstly, the most relevant existing motivation theories were analyzed using a comprehensive literature research. Basic intention and application areas of those theories were determined and characteristics were worked out.

Secondly, the practicability of the methods in the context of Industry 4.0 was analyzed.

3 Literature Review

The classical motivation theories serve to illustrate the impact of human behavior on motivation. They assume that motivation is triggered or controlled by satisfying personal needs or certain processes. Thus, a distinction is made between content and process theories (Montana and Charnov 2008). However it can be stated that content and process theories serve only to a limited extent different motivation criteria. The following tables summarize the most important motivation theories. Table 1 contains content theories and Table 2 gives an overview of process theories.

As shown in Table 1, content theories deal with motives and incentives by which a desired working behavior can be created. These include the hierarchy of needs

Table 1 Characteristics of content theories

Hierarchy of needs (Maslow 1943)	ERG theory (Alderfer 1969)	Two-factor theory (Herzberg 1974)	Theory of learned needs (McClelland 1987)	X–Y theory (McGregor 1966)
Self-realization	Existence needs	Hygiene factors avoid dissatisfaction (company policy, working conditions, workplace safety)	Need for personal achievement	Unwilling employee X: need for material security, need for pressure and guidance
Appreciation and recognition	Relatedness needs	Motivators cause satisfaction (Recognition, responsibility, personal development)	Personal need for authority	Willing employee Y: need for responsibility and self-determination, need for appreciation and recognition
Social relations/working atmosphere	Personal growth needs		Personal need for affiliation	
Workplace safety				
Physiological needs				

Source: Developed by the authors based on the literature

Table 2 Characteristics of process theories

Objective theory (Locke and Latham 1990)	Theory of justice (Adams 1965)	VIE theory (Vroom 1994)	Motivation model (Porter and Lawler 1967)
Knowledge about company objectives	Demand of higher output (remuneration, recognition, development) to achieve balance	Strive for the greatest possible personal value (valence)	Satisfaction through just individual reward
Acceptance of company objectives	Reduction of the individual input (performance) to achieve balance	Strive for the greatest possible connection between action and achievement (instrumentality)	Need for a high probability of occurrence
Identification with company objectives		Individual output expectation	
Need for feedback concerning the achievement			

Source: Developed by the authors based on the literature

according to Maslow (1943), the existence-relatedness-growth theory according to Alderfer (1969), the two-factor theory according to Herzberg (1974), as well as the theory of learned needs according to McClelland (1987) and the X–Y theory according to McGregor (1966) and Mantle and Lichty (2013). Those theories are directed primarily at human-social needs, so-called soft factors. It is obvious that the hierarchy of needs and the ERG theory fulfill the same criteria: from the requirement of basic needs up to self-realization and thus can be summarized.

The theories by Herzberg and McGregor do not focus on the employees' needs directly, but rather make statements about the link between their needs and the environment. The former describes the level of motivation as a result of satisfaction with the work environment. The second links the motivation with the attitude of the employees.

In Table 2, the most common process theories are summarized. They however explain how motivation emerges formally and affects the behavior of employees—detached from their needs. In this respect, expectations regarding the achievement of personal objectives are also taken into account. This type of motivation is discussed by Locke's theory of objectives (Locke and Latham 1990), Adams' theory of justice (Adams 1965), the valence–instrumentality–expectation theory according to Vroom (1994), and the motivational model according to Porter and Lawler (1967). Process theories work with hard, performance-oriented factors such as performance and goals. The reward plays an important role in all process theories, but is neglected by the content theories. The theory of justice, the VIE theory and the motivation model according to Porter and Lawler are quite similar in the literature and state the cost–benefit thinking of employees as main factor for motivation. Locke, on the

other hand, attaches great importance on the degree of identification of employees with the company and their actions (Locke and Latham 1990).

It is interesting that, despite their different basic orientations, the characteristics of the X–Y theory according to McGregor and the target theory according to Locke and Latham (1990) are very similar. This is justified by the fact that these features are interdependent. If the objectives set include not only those on the part of the employer but also those of the employees, they contribute indirectly to self-realization.

The empirical survey described attempts to find out with the help of expert interviews whether the elaborated criteria or characteristics of the motivation theories are still valid in the age of digitization.

4 Methodology

It was examined which motivation approaches are currently applied in the industry. For this purpose, an empirical survey was conducted in the spring of 2016 in the form of qualitative expert interviews by the Institute for Industrial Management of FH JOANNEUM Kapfenberg.

The interviews done in this research were aimed at gathering process and action knowledge in the field of employee motivation. Therefore, in order to answer the outlined research question properly, this chapter uses a qualitative method. To get deeper practical inside on how motivationprocesses run in practice an expert interview seemed to be the most appropriate. In the expert interview, people who have extensive experience in the subject of HR are asked using the question–response model. This means that the interviewer directs the conversation through specific questions in a mostly predefined process (Atteslander 2003).

4.1 Sample

The sample of the study had to fulfill various requirements. Answering questions addressing the stated research question of this chapter requires special knowledge in the field of human resources based on qualification and professional experience. Furthermore, it was important that the HR managers currently work for successful companies. This was important to represent as much employees as possible that are affected by the chosen motivational activities.

Thus the target group consists of Human Resource Managers with several years of experience of the 20 leading industrial companies in the Austrian region Styria. Therefore, it must be noted that every sixth industrial employee in Austria is employed in Styria, which is why the results of the study can be regarded as conditionally representative for Austria as a whole (Industriellenvereinigung Steiermark 2016). A total of nine experts have declared themselves ready for an interview.

4.2 Research Design

The research design was based on the approaches of Atteslander (2003) and Handler (2007) and included the steps of preparation and contact, pretest, conduct of the interviews, and evaluation of the results. Within the preparation an interview guide as well as supplementary information material for the interview partners were prepared in advance. The defined questions were mainly formulated as open questions to secure the flow of speech beginning with an "icebreaker-question," The additional material was necessary to provide the expert with main theoretical information about the motivation theories. Therefore, all theories were listed with their definition, focus, and main criteria.

Contacting the experts took place only by telephone. The contact details including the experts name (if possible) and the company were researched in advance. The experts were only informed about the organizational requirements for the interview and that the general topic is about employee motivation issues. The fact that all experts received the same information beforehand was important to create the same conditions for conducting, which means it was not possible for the participants to prepare in advance for the conversation.

The learnings of the pretest were not only important for the quality of the questions but also for the documentation of the interviews. The pretest showed that the decision for personal interviews was correct, as asking questions in more detail was possible. In addition, documentation by hand proved to be easier and more comfortable for the person interviewed, compared to a digitalized documentation. Furthermore, highlighting the motivational measures on the catalog was problematic. Although the interviewer knew the catalog well, it turned out that especially the marking of a criterion, which occurs in several theories, took longer and addition information had to be provided separately. Thus, the decision was made to note down the motivation measures by hand separately and to work with the list of motivation theories during the interview in order to ask for criteria not mentioned.

The interviews were always done according to the same procedure. First, content, purpose, history, and duration of the interview were explained. Subsequently, the previously researched data were discussed and confirmed or adjusted. Later, the information collected in relation to motivational theories was transferred from the transcript into a content analysis. The results obtained were evaluated anonymously.

5 Empirical Results

5.1 Currently Used Motivation Measures

Using the motivation criteria illustrated in Tables 1 and 2, the motivation measures currently used in the company were interrogated in the expert interview and assigned to the corresponding motivational theories. Tables 3 and 4 show the application of

Table 3 Frequency of content theories

Hierarchy of needs (Maslow 1943)	ERG-theory (Alderfer 1969)	Two-factor-theory (Herzberg 1974)	Theory of learned needs (McClelland 1987)	X-Y-theory (McGregor 1966)
Self-realization	Existence needs	Hygiene factors avoid dissatisfaction (company policy, working conditions, workplace safety)	Need for personal achievement	Unwilling employee X: need for material security, need for pressure and guidance
Appreciation and recognition	Relatedness needs	Motivators cause satisfaction (Recognition, responsibility, personal development)	Personal need for authority	Willing employee Y: need for responsibility and self-determination, need for appreciation and recognition
Social relations/working atmosphere	Personal growth needs		Personal need for affiliation	
Workplace safety				
Physiological needs				

$n = 9$; Color represents nominal frequency: The darker the more often the motivation criterion was mentioned
Source: Developed by the authors based on the literature

the individual motivation theories in the companies split up in content and process theories. The individual criteria that are currently being implemented in the respective companies were collected during the interviews. Then, they were color coded according to the number of entries in the figure. The darker the color shading, the more often a criterion was called. Criteria which have not been deposited with any color have not been named by the interviewed persons.

As shown in Tables 3 and 4, the process theories are used much more strongly than content theories. Locke's goal theory, in particular, is a frequently used motivation method because most surveyed companies attach great importance to the criteria of this category. The focus of this theory is on the knowing and the identification of the employee with the company objectives as well as on the feedback on the target achievement. Of those respondents who applied at least four criteria of the goal theory, more than half said that the employee goals are

Table 4 Frequency of process theories

Objective theory (Locke 1990)	Theory of justice (Adams 1965)	VIE-theory (Vroom 1994)	Motivation model (Porter and Lawler 1967)
Knowledge about company objectives	Demand of higher output (remuneration, recognition, development) to achieve balance	Strive for the greatest possible personal value (valence)	Satisfaction through just individual reward
Acceptance of company objectives	Reduction of the individual input (performance) to achieve balance	Strive for the greatest possible connection between action and achievement (instrumentality)	Need for a high probability of occurrence
Identification with company objectives		Individual output expectation	
Need for feedback concerning the achievement			

$n = 9$; Color represents nominal frequency: The darker the more often the motivation criterion was mentioned
Source: Developed by the authors based on the literature

defined jointly by the executive and the employee. Thus, employees get individually tailored goals, and these goals contribute to the goal of the company at the same time. In addition, the interviewees mentioned that the goals should be challenging, but achievable. The theory of justice according to Adams, as well as the motivation model according to Porter and Lawler, are not taken into account, or only a few, by the surveyed companies.

Concerning the content theories, a trend for Maslow's need pyramids and the ERG theory developed by Alderfer can be seen. Particular attention is paid to the fulfillment of the basic needs (Maslow) and the needs of survival (Alderfer). This can also be explained by the very high level of worker protection in Austria. The self-realization (Maslow) and growth need (Alderfer) were remarkably little mentioned. This is a rather unsatisfactory result in the age of digitization, when personnel managers have obviously remained in a traditional way of satisfying the needs of their employees (only basic and security needs are important for them). Concerning the two factor theory according to Herzberg a great disagreement between the surveyed companies can be seen. While some consider a distinction between X and Y types as necessary, others believe that categorizing employees is not possible at all. The reason for this is that in certain situations a person would be described as type X, but in others as type Y. The theory of the acquired needs for McClelland, on the other hand, hardly plays a role.

In summary, Locke's goal theory is the most frequently applied motivation theory for the industrial companies surveyed.

5.2 Planned Motivation Measures Within the Framework of Industry 4.0

As part of the expert interviews, an attempt was made to ascertain which motivation measures within the framework of Industry 4.0 are regarded as important by the companies. Only one company stated that no digitization measures have yet been implemented or planned in the company. This is the company with the lowest number of employees in comparison with the others. Those companies that are already dealing with the subject matter have set up their own workgroups with experts or have created their own department, which plans the implementation.

The following measures were deducted:

- Inform employees at an early stage and communicate more intensively.
- Provide training programs and retraining.
- Prepare for change in small steps.
- Create diversified and challenging jobs.

5.2.1 Early and Enhanced Communication

The respondents confirmed the fear of many employees before a job loss. Their opinion is that the companies have to take away the fear with timely communication and information. The company's changes should be shown in detail and the advantages for the company as well as for the employees should be explained.

5.2.2 Training Programs and Retraining

Respondents agree that the employee's profile will change fundamentally. This also coincides with the literature or results of existing studies. In future, profound professional competence, analytical skills, networked thinking, and good process understanding will be necessary. The experts surveyed find it important to prepare their employees for the upcoming challenges through special training programs and retraining in time. In order to motivate the employees, trainings, seminars, workshops, etc. are not held in lecture style. New channels, which involve the human senses, are used.

5.2.3   Changes in Small Steps

The job profiles should be constantly and in small steps adapted to the future requirements of the fourth industrial revolution. Through the training measures, an employee can always take over a new task and is slowly prepared for his future task area. The implementation of Industry 4.0 is not intended to be a one-time big change; it should happen over a long period in many small steps. Lifelong learning will be self-evident.

5.2.4   Diversified and Challenging Jobs

The measures described above are intended to create an attractive workplace for the employees. In doing so, on the one hand, the requirements of flexible, internationally networked activities have to be taken into consideration, and on the other hand, to the individual needs of the employees should be take into account. The aim is to create a varied, challenging, and activating task profile which supports the intrinsic motivation of the employees.

6   Conclusion

In the future, there will be a lot of changes for companies. The fourth industrial revolution with its associated networking of all business segments will be a critical success factor for them. Due to the increasing cooperation between man and machine, the working situation will change fundamentally.

The surveyed companies are largely convinced that employee motivation will gain in importance under the conditions of the fourth industrial revolution. Companies demand outstanding performance from their employees as well as faster and more flexible work.

This can only be achieved by a high motivation level of the employees. It is clear to the interviewees that a classical application of the classical motivation theories is not possible. Rather, it is about applying individual criteria of the different motivation theories in a situation-specific and individual way. Only the criteria of Locke's goal theory will continue to be applied in the future.

In summary, it can be stated that there will be no change in the motivation factors used so far. However, the classical motivation theories will hardly be applied in Industry 4.0, but a mixture of the criteria of the individual theories will be used.

References

Adams, J. S. (1965). Inequity in social exchange. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (2nd ed., pp. 267–299). New York: Academic Press.

Adamson, G., Wang, L., & Moore, P. (2017). Feature-based control and information framework for adaptive and distributed manufacturing in cyber physical systems. *Journal of Manufacturing Systems, 43*(Part 2), 305–315.

Alderfer, C. P. (1969). An empirical test of a new theory of human needs. *Organizational Behaviour and Human Performance, 4*(2), 142–175.

Atteslander, P. (2003). *Methoden der empirischen Sozialforschung [Methods of Empirical Social Research]* (10th ed.). Berlin: Walter de Gruyter.

Bauernhansl, T., ten Hompel, M., & Vogel-Heuser, B. (2014). *Industrie 4.0 in Produktion, Automatisierung und Logistik [Industry 4.0 in production, automation and logistics]*. Wiesbaden: Springer Vieweg.

Becker, K.-D. (2015). Arbeit in der Industrie 4.0 – Erwartungen des Instituts für angewandte Arbeitswissenschaft e.V. [Work in Industry 4.0 - Expectations of the Institute for Applied Ergonomics e.V.]. In A. Botthof & E. A. Hartmann (Eds.), *Zukunft der Arbeit in der Industrie 4.0 [Future of work in Industry 4.0]* (pp. 23–30). Berlin: Springer Vieweg.

Frey, C., & Osborne, M. (2013). *The future of employment: How susceptible are jobs to computerisation?* [online]. Accessed May 15, 2018, from https://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

Gleich, R., Munck, J. C., & Schulze, M. (2016). Industrie 4.0: Revolution oder Evolution? Grundlagen und Auswirklungen auf das Controlling [Industry 4.0: revolution or evolution? Basics and effects on controlling]. In R. Gleich, H. Losbichler, & R. M. Zierhofer (Eds.), *Unternehmenssteuerung im Zeitalter von Industrie 4.0: Wie Controller die digitale Transformation erfolgreich steuern [Corporate governance in the age of Industry 4.0: How controllers successfully manage the digital transformation]* (pp. 21–42). München: Haufe-Lexware.

Handler, G. (2007). *Konzept zur Entwicklung integrierter Beratung: Integration systemischer Elemente in die klassische Beratung [Concept for the development of integrated consulting: Integration of systemic elements into classic consulting]*. Wiesbaden: GWV Fachverlage.

Herzberg, F. (1974). *Motivation-hygiene profiles: Pinpointing what ails the organization*. Amsterdam: Elsevier.

Hirsch-Kreinsen, H. (2015). Gestaltungsperspektiven von Produktionsarbeit bei Industrie 4.0 [Design perspectives of production work at Industry 4.0]. In C. M. Schlick (Ed.), *Arbeiten in der digitalisierten Welt, Beiträge der Fachtagung des BMBF 2015 [Working in the digitalized world, contributions of the symposium of the BMBF 2015]* (pp. 25–34). Campus Verlag: Frankfurt am Main.

Industriellenvereinigung Steiermark. (2016). *Industrieland Steiermark [Industrial country Styria]* [online]. Accessed May 15, 2018, from https://www.iv-steiermark.at/de/

Kagermann, H., Wahlster, W., & Helbig, J. (2013). *Umsetzungsempfehlungen für das Zukunftsprojekt Industrie 4.0, Promotorengruppe Kommunikation der Forschungsunion Wirtschaft – Wissenschaft [Implementation recommendations for the future project Industrie 4.0, promoter group Communication of the Forschungsunion Wirtschaft – Wissenschaft]* [online]. Accessed May 15, 2018, from https://www.bmbf.de/files/Umsetzungsempfehlungen_Industrie4_0.pdf

Kraft, G. (2016). Product Lifecycle Management – Vom Bauchgefühl zur Simulation von Entscheidungen [Product Lifecycle Management - From gut feeling to simulation of decisions]. *etz elektrotechnik & automation*, 8/2015, 53–55.

Locke, E., & Latham, G. (1990). *A theory of goal setting & task performance*. New Jersey: Prentice Hall.

Mantle, M. W., & Lichty, R. (2013). *Managing the unmanageable: Rules, tools, and insights for managing software people and teams*. New Jersey: Pearson Education.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50*(4), 370–396.

McClelland, D. C. (1987). *Human motivation* (2nd ed.). Cambridge: Cambridge University Press.

McGregor, D. (1966). *The human side of enterprise* (5th ed.). Cambridge: MIT Press.

Mitchell, T. R. (1984). *Motivation and performance*. Chicago: Science Research Associates.

Montana, P. J., & Charnov, B. H. (2008). *Management: Classical management theory, organizational structures, human resource management, work group dynamics, and much more* (4th ed.). New York: Barron's.

Porter, L. W., & Lawler, E. E. (1967). The effect of performance on job satisfaction. *Industrial Relations, 7*(1), 20–28.

Roels, J. A. (2012). *The origin and the evolution of firms: Information as a driving force*. Amsterdam: IOS Press.

Roth, A. (2016). Industrie 4.0 – Hype oder Revolution? [Industry 4.0 – Hype or Revolution]. In A. Roth (Ed.), *Einführung und Umsetzung von Industrie 4.0: Grundlagen, Vorgehensmodell und Use Cases aus der Praxis [Introduction and implementation of Industry 4.0: Fundamentals, process model and use cases from practice]* (pp. 1–15). Berlin: Springer Gabler.

Sorko, S. R., & Kreil, M. (2016). Personalentwicklung im Wandel der vierten industriellen (R) evolution [Personnel development in the course of the fourth industrial (R)evolution]. In: Fachhochschule des BFI Wien, *Brücken bauen-Perspektiven gestalten [Building bridges – Create perspectives]* [online]. Accessed December 7, 2017, from http://ffhoarep.fh-ooe.at/handle/123456789/744

Sorko, S. R., Perez-Alonso, A., & Rabel, B. (2017). Kann Digitalisierung ohne den Menschen funktionieren [Can digitization work without humans]? *WINGbusiness*, 01/2017, 36–40.

Thomas, K. W. (2010). *Intrinsic motivation at work: What really drives employee engagement* (2nd ed.). San Francisco: Berrett-Koehler.

Vroom, V. H. (1994). *Work and motivation* (2nd ed.). San Francisco: Jossey-Bass.

World Economic Forum. (2016). *The future of jobs – Employment, skills and workforce strategy for the fourth industrial revolution* [online]. Accessed May 15, 2018, from http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf

Yin, Y., Stecke, K. E., & Li, D. (2018). The evolution of production systems from Industry 2.0 through Industry 4.0. *International Journal of Production Research, 56*(1–2), 848–861.

Workplace Bullying: Organizational Antecedents and HRM Prevention Program

Sahar Ahmed and Kamel Omran

Abstract There is an increasing interest in the topic of workplace bullying; however, there is scarce empirical literature examining the role of human resource management (HRM) in addressing this issue in Egypt and the Arab Region. The present study aims to examine several contributing factors that predict workplace bullying, as well as HRM prevention programs that counter workplace bullying. A sample of 384 respondents was selected from insurance companies in Cairo, Egypt. Three hundred and fifty questionnaires were returned from respondents, representing a response rate of 91.15%. Several statistical analysis techniques were applied to analyze the relationship between the study variables, such as regression analysis and structural equation modeling. The main findings of this study revealed that anti-bullying training has a negative relationship with workplace bullying. Anti-bullying policy has no significant relationship with workplace bullying. Moreover, the results show the mediating impact of positive organizational culture in the relationship between destructive leadership and workplace bullying. The results imply that training is indeed influential in addressing workplace bullying. In addition, bullying policy may not be as effective in addressing workplace bullying, especially if not properly communicated to organizational members. The present findings emphasize the underlying mechanism through which destructive leadership might influence workplace bullying.

Keywords Workplace bullying · Positive organizational culture · Destructive leadership · Anti-bullying program

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1 Introduction

Workplace bullying is a form of interpersonal mistreatment that goes beyond uncivil workplace behavior, and includes intentional and persistent degrading treatment of other people that leads to aggressive work environment (Salin 2003). Research on workplace bullying has started to capture the interest of researchers from various disciplines since 1990, with the pioneering work of Leymann (1990) who studied aggressive behavior and hostile treatment directed toward individuals from a group of children. Leymann (1990) termed this behavior as "mobbing." He later widened the scope of his research to include organizations and started investigating similar workplace-related behavior; he termed this behavior as workplace bullying. His research has laid the foundation of research on the topic in Europe and stimulated the interest of researchers and practitioners who have started to investigate the prevalence of bullying, as well as its enablers and consequences. However, the current literature related to workplace bullying has many limitations, especially in regards to the availability of empirical literature examining the role of HRM in Egypt (Alswaid 2014), as well as the underlying (mediators) and intervening (moderators) mechanisms in workplace bullying. This was largely due to the fact that they would bring more insight and powerful explanation into bullying research (Rai and Agarwal 2016).

Several enablers to workplace bullying have been examined in HRM literature. Organizational culture and leadership tendencies were among the highest contributors to negative workplace behavior (Zapf 1999; Harvey et al. 2006; Claybourn 2011; Appelbaum et al. 2012; Tambur and Vadi 2012). Accordingly, organizational culture and leadership style may also act as a double-edged sword, namely; they can act as facilitators or hinderers to workplace bullying behavior, according to the values that are dominated by organizational culture and leadership styles. Although destructive leadership has proven to have an adverse impact on organizations, few studies have examined the relationship between destructive leadership and workplace behavior compared to the many studies that have examined constructive leadership style (Burke 2006; Mitchell and Ambrose 2007). Furthermore, most research has examined the direct relationship between leadership and negative workplace behavior. However, the question of whether or not destructive leadership does influence workplace bullying through mediating variables such as organizational culture remains unanswered (Rai and Agarwal 2016). Arguably, it is unclear if destructive leadership stimulates a destructive climate or vice versa (Sims and Brinkmann 2002). Thus, the main objective of this study is to examine the mediating impact of organizational culture on the relationship between destructive leadership and workplace bullying.

Literature on workplace bullying suggests anti-bullying policy and anti-bullying training as main components of an effective bullying prevention program; however, few research has empirically examined the impact of such programs in the reduction of workplace bullying; and most of these studies were applied case studies (Vartia 2013). Moreover, the common measurement approach used by these studies relied

on reported bullying incidents, assuming that the effectiveness of said programs is in direct relation to a reduction in the reported bullying incidents. However, the main criticism aimed at this approach is that it does not take into account the unreported bullying incidents, which thereby underestimates the scope of the problem. Conversely, the present research utilizes the questionnaire method as a more reliable approach to measuring workplace bullying. This type of measurement ensures confidentiality and anonymity to individuals, and thus, reduces the fear of reporting bullying incidents in terms of retaliation from the bully.

Furthermore, the majority of workplace bullying literature has been conducted in European and Western countries. Very few research, in contrast, has been applied in Arab countries (Alswaid 2014). The present study has been applied on the insurance sector in Egypt, which is considered a rare and uninvestigated sector in bullying literature, despite the fact that it plays a vital role in both economic and social development. According to the statistics reported by the Financial Regulatory Authority (2014), insurance premiums represent about 0.8% of GDP, which in retrospect implies that investment in the insurance sector in Egypt is very attractive. This helps support economic development by attracting new investments in the Egyptian market, as well as creating new job opportunities (Financial Regulatory Authority 2014). The pilot study of the current research reported a high turnover ratio in several insurance organizations in Egypt, due to workplace bullying behavior, which has been documented in exit surveys. Hence, the results provided by the present study aim to help professionals working in the insurance sector to understand and control various antecedents to workplace bullying, as well as to assist in devising HRM bullying prevention strategies. The aforementioned steps should hopefully lead to a reduction in workplace bullying and consequently better retention of employees.

In light of the aforementioned limitations in the extant literature, the aim of this chapter is to empirically investigate the impact of HRM bullying prevention programs on workplace bullying, as well as examining the underlying mechanisms to the relationship between destructive leadership and workplace bullying.

Based on the current gaps in HRM literature and the problem of the research, this study seeks to answer the following research questions: How significant of an impact does human resource management bullying prevention programs have on workplace bullying? What is the nature of the role of positive organizational culture in the relationship between destructive leadership and workplace bullying?

2 Literature Review and Hypotheses Development

2.1 Workplace Bullying

No consensus has yet been reached among researchers regarding the definition of workplace bullying. This ambiguity in conceptualization and definition has been attributed to differences in industrial relations and socio-cultural frameworks (Rai

and Agarwal 2016). Bullying has been widely defined in business literature as negative workplace behavior. For example, Salin (2003, p.1214) has defined workplace bullying as "repeated and persistent negative acts, including social isolation, silent treatment, rumors, attacking victims' private life or attitudes, excessive criticism or monitoring, withholding information, depriving individuals of responsibility, and verbal aggression." However, researchers have warned that not all forms of negative workplace behavior can be labeled as workplace bullying. Apparently, there is a definitional and conceptual similarity and overlapping between workplace bullying and other related negative workplace behavior, such as workplace violence, workplace aggression, workplace incivility, workplace harassment, workplace deviance, social undermining, and emotional abuse. However, there are key distinguishing aspects which differentiate workplace bullying from other related terms. These are: persistence, duration, and power difference. Persistence reflects the repetition of bullying behavior (once or twice a week). Duration reflects the period of time involved (at least for 6 months). Power difference exemplifies an essential condition to workplace bullying, where there is a variance in levels of power between the bully and the target. This leads to a situation where the target is unable to protect himself/herself from such a negative act. Based on the aforementioned perspectives, the present study adopts the definition provided by Hoel and Cooper (2000, p. 6), who have defined workplace bullying as: "a situation where one or several individuals persistently, over a period of time, perceive themselves to be on the receiving end of negative actions from one or several persons, in a situation where the target of bullying has difficulty in defending him or herself against these actions." Although no consensus has been reached by researchers regarding the duration and frequency of workplace bullying, most researchers considered the duration of bullying to be within a minimum period of six months, and the frequency to average that of once per week (Leymann 1990; Einarsen 2000; Cowie et al. 2002).

Bullying behavior ranges from subtle to identifiable behavior. Such behavior has been grouped into three main categories: First: work-related behavior such as withholding information, excessive monitoring, unreasonable deadlines, and unmanageable workload. Second: person-related behavior such as public humiliation, persistent criticism, and repetitive reminders of errors. Third: physically intimidating behavior such as insulting, and threatening (Rai and Agarwal 2016).

The global prevalence and detrimental effects of workplace bullying are well documented in HRM literature. For example, it has been reported that 95% of employees have reported being subjected to workplace bullying over a period of 5 years (Rai and Agarwal 2016). In addition, between 35% and 50% of workers in the USA were subject to bullying behavior during their period of employment (Wheeler et al. 2010). A massive amount of literature is available on organizational antecedents (enablers) and the consequences of workplace bullying. Among these enablers are ineffective leadership, organizational culture job stress, inappropriate work design, stressful work conditions, organizational restructuring and outsourcing (Zapf 1999; Harvey et al. 2006; Daniel 2009).

The most reported negative outcomes to workplace bullying include low organizational commitment, low job satisfaction, poor individual performance, mental and

physical illness (Harvey et al. 2006; Wilson 2010; Bentley et al. 2012). Also, the negative impact of workplace bullying reportedly goes beyond employees, and encompasses severe financial consequences to organizations. A good example of this would be a recent survey conducted in 2008 by the American Psychological Association, where it has been found that American organizations lose an estimated $300 billion every year due to the aforementioned consequences (Daniel 2009). Hence, organizations that are keen to retain their human assets should strive to provide them with a healthy working environment, free from bullying.

2.2 Destructive Leadership

Destructive leadership is defined as the "systematic and repeated behavior by a leader, supervisor or manager that violates the legitimate interest of the organization, by undermining and/or sabotaging the organization's goals, tasks, resources, and effectiveness and/or the motivation, well-being or job satisfaction of subordinates" (Einarsen et al. 2007, p. 208). Few research has empirically examined destructive leadership, while comparatively, most research has examined constructive leadership style. Burke (2006) posits that investigating the "dark side" of leadership would result in a more concrete research in leadership, which would enhance our understanding of effective leadership. Arguably, the impact of negative behavior in social interaction has proven to be more influential than positive behavior. Therefore, investigating destructive types of leadership would provide to be of more value than examining the positive types of leadership (Einarsen et al. 2007). Therefore, the present study aims to act as a response to a call by many researchers to investigate the characteristics and outcome of destructive leadership.

Researchers have grouped several leadership styles that fall within the domain of destructive leadership; such as abusive supervision, health endangering leaders, petty tyrants (Ashforth 1997), and toxic leaders (Aubrey 2012). Destructive leadership has been reported to have an adverse impact on organizations (Hornstein 1996). Accordingly, in order to address workplace bullying, organizations are in dire need for leaders who display positive leadership style and the ability to positively change and influence organizational culture, as well as displaying the standards of behavior required and expected of organizational members (Coldwell 2013). Few studies, however, have examined the relationship between leadership and workplace behavior (Mitchell and Ambrose 2007). Workplace bullying has been reported to have a direct relationship with laissez-faire leadership (Bentley et al. 2012; Tsuno and Kawakami 2014), low individual consideration (Tsuno and Kawakami 2014), non-contingent reward and autocratic or tyrannical leadership (Hoel et al. 2010), low level of constructive leadership (Bentley et al. 2012), and exploitative, paternalistic leadership (Soylu 2011). Drawing on the findings of the aforementioned literature, we hypothesize the following:

Hypothesis 1: Destructive leadership has a significant positive relationship with
    workplace bullying.

2.3 *Organizational Culture*

Organizational culture reflects certain values, beliefs, and assumptions held by
organizational members and guide their behavior and decisions. Florea et al.
(2011, p. 488) defines organizational culture as "shared values and beliefs that
give members of an organization meaning and provide them with roles for behav-
ior." Organizational culture sets down the unwritten standards that guide the behav-
ior of organizational members. It is widely known that organizational leaders can
influence organizational culture; as their behavior is emulated by other managers and
executives within the same organization. Accordingly, newly joined employees
learn organizational culture from their managers and senior employees (Florea
et al. 2011). Hence, organizational culture can either promote or decrease the risk
of bullying behavior.

Coldwell (2013) cited several positive outcomes for organizations that have a
respectful culture including high commitment and trust among employees, high
performance and productivity, low stress, low conflict, and low turnover rates. On
the other hand, organizations that tolerate workplace bullying as part of their culture
tend to experience negative outcomes, such as employee dissatisfaction, high rates of
turnover, low morale, high numbers of grievances and complaints, workplace
incivility, violation of organizational rules and policies, as well as low performance
standards.

Denison et al. (2006) have identified four dimensions of organizational culture:
those are adaptability, consistency, involvement, and mission. Adaptability refers to
the ability of the organization to adapt its internal structure, conduct and system to its
external environment. Consistency refers to the degrees to which members of the
organization share common values, views, and expectations. Involvement refers to
the degree of employee involvement in the process of decision-making. Finally,
mission refers to the shared understanding by organizational members of organiza-
tional objectives and purpose. For the purpose of the present study, Denison et al.'s
(2006) consistency dimension of organizational culture was adopted, as it reflects the
core value of organizational members.

Several studies have reported a negative relationship between workplace bullying
behavior and organizational culture (Zapf 1999; Claybourn 2011; Appelbaum et al.
2012; Tambur and Vadi 2012). The present study suggests that positive organiza-
tional culture has a significantly negative relationship with workplace bullying, as it
neither fosters nor promotes it, drawing on the social information processing theory
(SIPT), which explains how organizational members observe and analyze the social
environment to understand appropriate and inappropriate behaviors in the workplace
and determine their behavior accordingly (Salancik and Pfeffer 1978). SIPT posits
that organizational members usually observe and analyze the behavior of

organizational leaders and other members, which in turn, shapes their understanding of accepted and/or rewarded behaviors versus unaccepted behaviors. Given the theoretical framework and the reported findings of literature, the present study hypothesizes the following:

Hypothesis 2: Positive organizational culture has a significant negative relationship with workplace bullying.

2.4 Destructive Leadership and Workplace Bullying: Organizational Culture as a Mediator

Organizational antecedents and outcomes of workplace bullying have been extensively examined and well understood in literature. However, the underlying mechanism that grounds these consequences has not been fully investigated up to date. There is a reported scarcity of research investigating mediators and moderators in antecedent–bullying relationships. In addition, most factors that have been examined as mediators to the antecedents–bullying relationship are job characteristics, individual dispositions, and organizational climate (Rai and Agarwal 2016).

A review of literature, however, revealed a different opinion regarding the possible factors influencing organizational culture. Some researchers argue that organizational leaders are the most important factor that influences organizational culture (Fleet and Griffin 2006), while others attribute the more substantial influence to other external factors, such as universal values, personal values, and socio-cultural values. Aubrey (2012) pointed out that it is very difficult for leaders to change the universal values accepted and shared by society's members; however, leaders could change or corrupt personal values and socio-cultural values due to the fact that these values are contextual and more situation-specific values. Thus, accordingly, it is expected that organizational leaders should have the ability to influence some elements of organizational culture; such as norms, values, and behavior.

Initially, the impact of leadership on organizational culture is documented in literature. Fleet and Griffin (2006) pointed out an example of this phenomenon in the fact that leaders influence organizational culture by setting the tone of the organization and shaping the norms and values. Hence, if the leader is more task oriented rather than people oriented, or is untruthful, or does not respect the rights of employees, employees will absorb this behavior, and the culture of the organizations will lean toward dysfunction. Arguably, it is unclear if destructive leadership does in fact stimulate a destructive climate or vice versa. Sims and Brinkmann (2002) proposed a model describing the relationship between leadership style, unethical work climate, and unethical behavior. The model shows that unethical work climate is not only influenced by a destructive leadership, but also influences destructive leadership as well. In addition, unethical behavior is not only the result of unethical work climate, but also impacts it in a system feedback loop. Similarly, a recent study by Elçi et al. (2013) reported that an ethical work climate mediates the relationship

between ethical leadership and the antisocial behaviors of employees, encompassing workplace bullying. In a similar vein, a study by Mayer et al. (2010) reported that an ethical work climate has been proven to be a mediator in the relationship between ethical leadership and employee misconduct. On the same line, Aubrey (2012) reported that organizational culture has a mediating effect on the relationship between toxic leaders and out-of-value behavior displayed by organizational members. Furthermore, a study by Georgakopoulos et al. (2011) found that organizational culture accelerates the problem of workplace bullying when leaders either do not have substantial knowledge about workplace bullying, or when they ignore the problem altogether and choose to consider it a form of tough management.

Although the aforementioned studies and models have contributed to understanding of the relationship between ethical leadership and ethical climate relation, the main drawback of these studies is that they measured the dependent variable (unethical behavior) using data collected from supervisors only which is argued to reduce the objectivity of the data. The present study hopes to overcome this drawback by collecting data on workplace bullying from both employees and supervisors.

Furthermore, the proposed mediating impact of positive organizational culture on destructive leadership and workplace bullying relationship is supported by Bandura's Social Learning Theory (SLT). SLT posits that employees are active observers of the social environment; in that they regularly analyze leaders' behavior to learn accepted and unaccepted behavioral patterns in the workplace through the process of role modeling. In addition, employees are likely to absorb and emulate the behavior of their direct supervisor, as they have the power to inflict both reward and punishment for positive and negative behavior displayed by employees (Mayer et al. 2010). Therefore, drawing on SLT theory and the findings of the present literature review, this study hypothesizes the following:

Hypothesis 3: Destructive leadership has a significant negative relationship with positive organizational culture.
Hypothesis 4: Positive organizational culture mediates the relationship between destructive leadership and workplace bullying.

2.5 HRM Bullying Prevention Programs

Human Resource managers and professionals have a vital role in addressing workplace bullying. However, this role is not emphasized in most empirical studies (D'Cruz and Noronha 2009). HRM research has recently emphasized the significant role that HRM professionals have in understanding and controlling various antecedents to workplace bullying, as well as designing and implementing bullying-prevention programs to address this problem.

D'Cruz and Noronha (2009) conducted a qualitative study to examine the role of human resource managers in assisting targets to cope with bullying incidents,

drawing on findings taken from a sample of international call center employees in India. The findings of the study highlighted the important role that human resource professional have in resolving bullying incidents and protecting bullying victims.

2.5.1 Anti-Bullying Policy

The starting point of prevention strategies to workplace bullying is developing a policy that prevents bullying from occurring in the first place. Rayner and Lewis (2011, p. 327) defined anti-bullying policy as "the statement that displays the employer's intention to manage workplace bullying and the procedures that will follow it." Developing an anti-bullying policy is in the best benefit of organizations in order to prevent conflict from escalating into bullying. It is the obligation of management to protect its employees from aggressive behavior. Failure to do so leads to management failure (Leymann 1996). An anti-bullying policy also guarantees giving HRM professionals power, legitimacy, and a guiding role, when addressing bullying situations (Cowan 2009). Researchers have recommended several contents of the proposed bullying policy, such as a defining workplace bullying, clarifying accepted organizational values and practices, giving examples of workplace bullying behavior, a zero-tolerance statement prohibiting workplace bullying, explaining grievance procedures, referring to regulations, allocation of roles and responsibilities to address workplace bullying, clarifying the prevention measures implemented, explaining measures taken to monitor and evaluate the bullying policy, as well as providing guidance and information to the victim, the bully and the bystander (Einarsen et al. 2009).

The absence of a clear policy on workplace bullying might give a wrongful indication to bullies that bullying is accepted as a part of organizational culture, and provides them with little to no motivation to stop this negative behavior. In fact, some organizations go as far as rewarding the bully with promotions and incentives for being tough, and having a firm grip of control over subordinates (Daniel 2009). Although most employers now have a policy in place to address workplace bullying, the policy in itself has proved to be ineffective in the majority of bullying cases, as the policy is rarely communicated to organizational members or used in conjunction with other program, such as providing awareness training on workplace bullying to staff members (Rayner and Lewis 2011).

2.5.2 Anti-Bullying Training

Anti-bullying training should communicate acceptable norms of behavior and codes of conduct that should be followed by organizational members in the event of bullying incidents occurring (Wheeler et al. 2010). The present study draws on Novak's Theory of Learning (NTL) to explain the relationship between anti-bullying training and workplace bullying. NTL suggests that the reality that we construct about the world around us is based on our background knowledge, which is in turn

based on our experience. The implication required of applying Novak's theory to workplace bullying is that changing bullying attitudes and behavior requires meaningful conceptualization and learning (Altman 2010).

Several researchers have recommended providing training on workplace bullying to different groups in the organization. An example of such instances is presented here by Sandvik et al. (2009) who have suggested providing an organization-wide training to all members of the organization on workplace bullying. Other researchers have additionally recommended providing training to bystanders (Rayner and Lewis 2011). While other researchers have recommended providing training to managers that guide them on how to properly handle bullying situations (Salin 2008; Wheeler et al. 2010). Additionally, other researchers have recommended providing training to Human Resource Management representatives (Ferris 2004).

Empirical studies have reported a significant negative relationship between bullying prevention programs and workplace bullying. For example, a recent study by Thomas et al. (2013) investigating the impact of anti-bullying initiatives on workplace bullying, with data collected from 727 employees in nine New Zealand organizations working in the health care industry, revealed a negative relationship between anti-bullying policy and workplace bullying. In addition, Pate and Beaumont (2010) conducted a quantitative longitudinal study of a single organization to measure the effectiveness of bullying policies on the reduction of workplace bullying. Empirical evidence on the aforementioned study revealed a significant negative relationship between the existence of an anti-bullying policy and the reported incidents of workplace bullying. Similarly, a study conducted by Salin (2008) provided a description of measures taken to reduce workplace bullying among municipalities in Finland. Questionnaires were distributed to 431 respondents, and the results revealed that the prevention measures taken by said municipalities, including anti-bullying policies and training, were negatively associated with workplace bullying reports. Few studies, however, have succeeded to show a relationship between workplace bullying programs and the reduction in workplace bullying. For example, a study by Hoel and Giga (2006), assessing the effectiveness of the intervention strategies in the reduction of workplace bullying in five large public organizations, has failed to show a relationship between bullying policy and a reduction in workplace bullying.

Although the aforementioned studies have effectively contributed to understanding of the relationship between bullying prevention program and workplace bullying, the main shortcoming is that most of these studies relied on the reported bullying incidents as a measurement tool of workplace bullying. The main drawback of this approach is that it ignores the unreported cases of bullying, which might give a wrong estimation of the problem. The present study provides a contribution to previous empirical research on workplace bullying by examining workplace bullying using data collected from questionnaires that were distributed to organizational members, and further investigates its relationship with HRM prevention program. Given the findings of the literature review, this study hypothesizes the following:
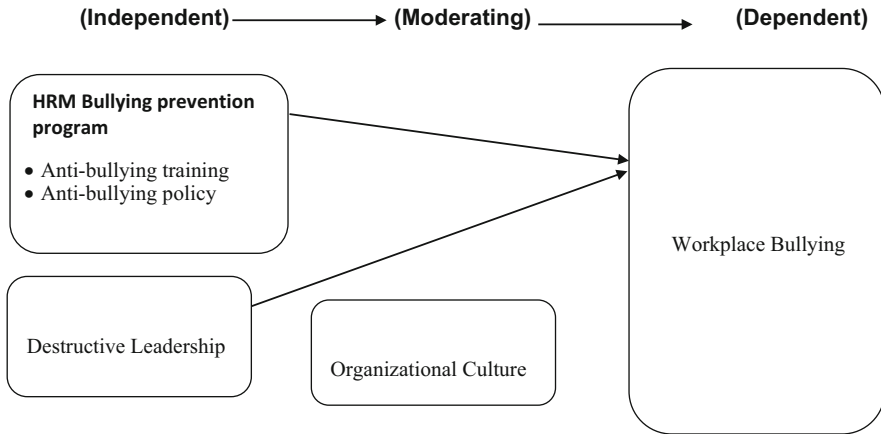
Fig. 1 Research model. Source: Developed by the authors

Hypothesis 5: HRM bullying-prevention programs have a significant negative relationship with workplace bullying: especially,

H5-a: Anti-bullying training has a significant negative relationship with workplace bullying.

H5-b: Anti-bullying policy has a significant negative relationship with workplace bullying.

In summary, we propose the theoretical framework in Fig. 1.

2.6 Methodology

2.6.1 Research Design and Sample Characteristics

The present study is a quantitative cross-sectional study. Participants in this study are organizational members working in both public and private insurance companies in Cairo, Egypt. Secondary data regarding total number of employees working in the insurance sector was collected from the Central Agency for Public Mobilization and Statistics. The data shows that the total number of employees working in Egyptian insurance companies was 10,265, from which 5555 employees working in the private sector compared to 4710 employees working in the public sector in 2015. A random sample was drawn to test the proposed research hypotheses. The sample size was 384 employees. Respondents were handed one survey and were informed that their responses would be kept anonymous. The survey began with an introductory letter from the researchers. Participants responded to a series of questions measuring workplace bullying behavior, organizational culture, leadership style, anti-bullying training, and anti-bullying policy. One month was given to the respondents to fill in the research questionnaire. After one month of follow-up with

respondents, 350 usable questionnaires were returned out of 384 questionnaires distributed to the target sample, which represents a 91.15% response rate. Several statistical analysis techniques were applied, such as regression analysis and structural equation modeling, to analyze the relationship between the study variables. In addition, a descriptive analysis was used to describe the status of the phenomenon and the importance of the variables.

2.6.2 Development of Scales and Measurement of Variables

The questionnaires used in the present study were developed based on an extensive literature review. All instruments in English were translated into Arabic by a specialized translator. The instruments adopted displayed a high degree of validity and reliability. Likert scale was used in the questionnaire design. The measurement scale consisted of five response categories ranging from "strongly disagree" to "strongly agree" which requires the respondents to indicate a degree of agreement or disagreement with each of the series of statements related to the questions. Data on workplace bullying was collected using the Negative Act Questionnaire Revised (NAQ-R) adopted from Einarsen et al. (2009). The questionnaire was reported to have a high Cronbach's alpha of 0.90, and indicating excellent internal consistency, with all factor loadings exceeding 0.70. Data on destructive leadership was collected using the Brutal Boss Questionnaire that was developed by Hornstein (1996). Data on organizational culture was collected using items from the organizational culture questionnaire adopted from Denison et al. (2006); the questionnaire was validated by Parcham and Ghasemizad (2017), another organizational culture questionnaire, adopted from Vadi et al. (2002) with Cronbach's alpha range from 0.74 to 0.80. The instrument used to collect data regarding the anti-bullying policy was developed by the researcher and adopted from a content analysis developed by Smith et al. (2008). Data regarding anti-bullying training was collected through a questionnaire developed by the researcher and verified by academic and professional experts in the field. This questionnaire consists of seven questions that measure the existence and effectiveness of an anti-bullying training program used by the organizations under scrutiny. The validity and reliability of the questionnaire scales were verified. The main questionnaire is included in appendix (1).

2.6.3 Sources of Data

Primary source of data was collected through a questionnaire. Secondary sources of data were collected from journals and periodicals, as well as information collected from the Central Agency for Public Mobilization and Statistics in Egypt, regarding both public and private insurance companies in Egypt. This information was valuable in determining sample size according to population.

2.6.4 Reliability of Research Constructs

The reliability test, using Cronbach's Alpha Coefficient, was employed to check reliability of the scales. Overall, all constructs have statistically acceptable ranges for observed items' internal consistency level, with Cronbach's Alpha Coefficient values, ranging from 0.779 to 0.951. Table 1 shows Cronbach's Alpha Reliability for the research variables. Three hundred and fifty observations were included in the study, which exceed the minimum sample size required and also achieve the desired observations-to-variables ratio, as the analysis includes 61 items distributed among five variables. Thus, the sample size in this research is considered adequate for performing factor analysis. Workplace Bullying elements were subject to PCA using SPSS. The KMO measurements of sample adequacy (MSA) showed 0.892, exceeding the minimum recommended value of 0.8. The results for Bartlett's Test of Sphericity were 14,350,000, with an associated statistical significance of ($p = 0.000$). This proves that the data is appropriate for PCA analysis (Table 2).

2.6.5 Validity of Research Constructs

Factor analysis was used to test the validity of the measurement scales, and to describe the underlying structure in the data matrix variable. Factor analysis here attempts to explain the correlation between large numbers of factors, in terms of a smaller number of constructs. That is, all items within a particular group (construct) are highly correlated among themselves, but have relatively smaller correlations with items in a different construct. Results showed that none of the elements had to be excluded from any items. Appendix 1 shows that three components were constructed

Table 1 Reliability analysis

Scale	No. of items	Cronbach's alpha
Workplace bullying/aggression	17	0.887
Organizational culture	16	0.779
Leadership	13	0.935
Total HRM bullying-prevention program	46	0.85
Anti-bullying policy	8	0.913
Anti-bullying training	7	0.951
Total organizational factors	15	0.935

Source: Authors' own calculations

Table 2 Kaiser–Meyer–Olkin (KMO) and Bartlett's Test

KMO measure of sampling adequacy		0.892
	Approx. Chi-Square	14,350,000
Bartlett's Test of Sphericity	Df	1830
	Sig.	0

Source: Authors' own calculations

in relation to workplace bullying, and they explained 55.03% of the total variance. Appendix 2 shows that five components were constructed in relation to organizational culture and they explained 61.23% of the total variance. Appendix 3 shows that two components were constructed in relation to leadership and they explained 68.05% of the total variance. Appendix 4 shows that two components were constructed here in relation to anti-bullying policy, and they explained 78.56% of the total variance. Finally, Appendix 5 shows that one component constructed was related to anti-bullying training, and it explained 77.53% of the total variance. Therefore, the results of the factor analysis revealed that the research constructs dealing with workplace bullying, leadership, organizational culture, anti-bullying training, and anti-bullying policy, have all exhibited construct validity.

2.6.6 Descriptive Analysis

Basic descriptive statistics were conducted to ensure that any distortions of the questionnaire response outputs were negligible. The descriptive analysis results (Table 3) indicate that the standard deviation is low, which revealed a weak distortion of the collected data regarding the means for all variables. These results imply the homogeneity of the surveyed sample. The results also indicate that the means for the variables ranged from moderate to high, which demonstrates their importance.

3   Results and Discussion

One of the primary objectives of the present study is to examine the relationship between destructive leadership and workplace bullying. Linear regression analysis was applied to test this relationship. The analysis shows that the coefficient of determination (R-square) $= 0.465$. This indicates that destructive leadership style explains 46.5% of the variance in workplace bullying. The ANOVA test reveals that the relationship is significant at p-value <0.05, this proves that hypothesis

Table 3 Descriptive statistics for the study variables

Variables	Mean	Std. deviation	Coefficient of variation	Relative importance %
Workplace bullying	2.0835	0.67754	53.74%	41.68%
Organizational culture	2.9214	0.29654	34.23%	65.62%
Leadership	1.7002	0.76882	59.85%	33.98%
Anti-bullying policy	2.8204	0.98621	44.32%	56.40%
Anti-bullying training	0.2569	0.34443	40.03%	62.20%

Source: Authors' own calculations

1 (H1) which states that destructive leadership has a significant positive relationship with workplace bullying. This result is in agreement with the findings of Hoel et al. (2010) and Bentley et al. (2012), who reported that destructive leadership or tyrannical leadership style has a significant positive relationship with workplace bullying. The results imply that destructive leaders, who consistently engage in behaviors that violate the legitimate interest of the organization by undermining the organization's goals, and/or the well-being or satisfaction of subordinates, were found to be more likely to increase negative workplace behaviors such as bullying.

The relationship between organizational culture and workplace bullying was also verified using the regression analysis, which shows the coefficient of determination (R-square) = 0.333. This indicates that organizational culture explains an estimated 33.3% of the variance in workplace bullying. In addition, the ANOVA test reveals that the relationship is significant at p-value <0.05, this proves hypothesis 2 (H2) which states that Positive organizational culture has a significant negative relationship with workplace bullying. This result is in agreement with the findings of previous studies (for example, Claybourn 2011; Appelbaum et al. 2012; Tambur and Vadi 2012) which supported the relationship between organizational culture and workplace bullying. This result indicates that positive organizational culture demonstrating respectful values is a very powerful tool in the reduction of workplace bullying. On the other hand, negative organizational culture demonstrating deficient values might be one of the main causes of workplace bullying. As in this case, bullies believe that bullying is normal, as the organization gives them silent consent to engage in such behavior, and hence, organizational members develop a negative perception regarding the organizational culture.

Another objective of this study is to investigate the mediating impact of positive organizational culture on the relationship between destructive leadership and workplace bullying. The Structural Equation Modeling (SEM) provides the appropriate and most efficient estimation technique for a series of separate multiple regression equation, simultaneously estimated (Hair et al. 2010). Also, the structural model (PATH model) relates a range of independent to dependent variables. To test the hypothesized relationships, Path analysis was applied, using the SEM, especially to examine the impact of destructive leadership on workplace bullying, to further test the mediating role of positive organizational culture. The hypotheses testing was conducted by examining the estimates of the standardized parameters and their t-value.

The overall measurement model shows that all Beta weights were significant at $p < 0.05$. Standardized regression weights and factor loadings ranged from -0.154 to -0.828 (t-value of -8.142 to 14.12). The result of the PATH analysis shows that there is a significant positive impact of destructive leadership on workplace bullying ($\beta = 0.473$, $t = -14.120$, $p = 0.00 < 0.05$). Furthermore, the results indicate that destructive leadership has a significant negative relationship with positive organizational culture ($\beta = -0.154$, $t = -8.142$, $p = 0.00 < 0.05$), and this proves hypothesis 3 (H3) which states that destructive leadership has a significant negative relationship with positive organizational culture. The results also indicate that positive organizational culture has a significantly negative relationship with

Table 4 Simple linear regression analysis—Model 1-a

Model	R	R square	Adjusted R square	Std. error of the estimate	Durbin–Watson
1.a	−.619a	0.383	0.381	0.53295	1.75

a—Predictors: (Constant), Anti-bullying training
Dependent variable: Workplace bullying
Source: Authors' own calculations

Table 5 Model (1.a) ANOVA

	Sum of squares	D.f	Mean square	F	Sig.
Regression	61.369	1	61.369	216.061	.000a
Residual	98.843	348	0.284		
Total	160.212	349			

a—Predictors: (Constant), Anti-bullying training
Dependent variable: Workplace bullying
Source: Authors' own calculations

workplace bullying ($\beta = -0.828$, $t = -9.532$, $p = 0.00 < 0.05$). Meanwhile, the results show that the direct impact of destructive leadership on positive organizational culture is −40%, while the direct impact of destructive leadership on workplace bullying is 53.7%. However, the indirect impact of destructive leadership on workplace bullying is 14.5%. Moreover, the direct impact of positive organizational culture on workplace bullying is −36.3%. The overall measurement model shows good variables (GFI = 0.911; AGFI = 0.922; CFI = 0.938; IFI = 0.952; RMSEA = 0.058; RMR = 0.062). The aforementioned statistics shows support for the convergent validity of the measurement model. The results support hypothesis 4 (H4) which states that positive organizational culture mediates the relationship between destructive leadership and workplace bullying.

The above results are in agreement with other studies (Sims and Brinkmann 2002; Mayer et al. 2010; Elçi et al. 2013) who proposed a model, depicting organizational climate as a mediator in the relationship between ethical leader and unethical behavior. However, the present study uses organizational culture as a mediator, since organizational culture involves a deeper and more powerful analysis, and would bring more meaningful and long-lasting improvement in behavior. Simple linear regression analysis was used to investigate the effect of HRM bullying-prevention program on workplace bullying. Hypothesis H5-A predicts a significantly negative relationship between anti-bullying training and workplace bullying. Table 4 shows that the model (1-a) coefficient of determination (R-square) = 0.383, this indicates that anti-bullying training explains 38.3% of the variance in workplace bullying. Moreover, ANOVA Table 5 shows that the statistical relationship is significant at p-value <0.05. And $R = -0.619$, this proves hypothesis H5-a.

The above result is in agreement with a study by Salin (2008), reporting that prevention measures taken by the municipalities, including training, were positively associated with the low percentage of workplace bullying reports. This result indicates that training plays a vital role in raising the awareness of organizational

Table 6 Model (1-b) ANOVA

	Sum of squares	D.f	Mean square	F	Sig.
Regression	0.003	1	0.003	0.007	0.932 a.
Residual	160.209	348	0.46		
Total	160.212	349			

a—Predictors: (Constant), Anti-bullying policy
Dependent variable: Workplace bullying
Source: Authors' own calculations

members to better understand the problem of workplace bullying, the behaviors that constitute the problem, and the grievance procedures available if they were subject to bullying. Training also raises the awareness of leaders on how to provide support to followers, and may as well encourage leaders who are bullies themselves into changing their behavior, thus supporting some theories such as Novak's Learning Theory, which states that changing bullying attitudes and behaviors requires meaningful conceptualization and learning.

On the other hand, the ANOVA test (Table 6) reveals no significant relationship between anti-bullying policy and workplace bullying, at p-value >0.05. Therefore, hypothesis H5-b was not validated, which indicates that anti-bullying policy has a significant negative relationship with workplace bullying. This result is in agreement with a study by Hoel and Giga (2006), which failed as well to show a relationship between bullying policy and the reduction in workplace bullying. Nevertheless, this result was inconsistent with the findings of other empirical studies, reporting a significant negative relationship between anti-bullying policy and workplace bullying (for example, Salin 2008; Pate and Beaumont 2010; Thomas et al. 2013). The descriptive analysis, however, shows that the selected sample disagrees on the existence of an anti-bullying policy in their organizations, despite the fact that the majority of these organizations have a bullying policy in the workplace. This could be attributed to the failure of organizations under scrutiny to effectively communicate workplace bullying policy to organizational members.

The correlation matrix Table 7 shows a significant and fairly moderate negative correlation between workplace bullying and anti-bullying training, as well as between workplace bullying and positive organizational culture. All correlations were in the expected direction indicating that positive organizational culture and anti-bullying training are influential strategies in combating workplace bullying. It is worth noting that the strongest relationship was found between destructive leadership and workplace bullying. This shows that destructive leaders can exacerbate the risk of bullying, while the weakest and nonsignificant relationship was found between anti-bullying policy and workplace bullying. This could be attributed to the failure of organizations under scrutiny to effectively communicate workplace bullying policy to organizational members.

Table 7 Correlation matrix

		Workplace bullying	organizational culture	Destructive leadership	Anti-bullying policy	Anti-bullying training
Workplace bullying	Pearson correlation	1	−0.577**	0.682**	−0.005-	−0.619**
organizational culture	Pearson correlation	−0.577**	1	−0.400**	0.256**	0.636**
Leadership	Pearson correlation	0.682**	−0.400**	1	−0.015-	−0.470**
Anti-bullying policy	Pearson correlation	−0.005-	0.256**	−0.015-	1	0.418**
Anti-bullying training	Pearson correlation	−0.619**	0.636**	−0.470**	0.418**	1

Source: Authors' own calculations
** indicates significance is 0.00

4 Implications

4.1 Theoretical Implication

The present study has contributed to HRM literature through the following: first, the study found a mean of support for the mediating effect of positive organizational culture on workplace bullying. Although most empirical studies have examined the direct impact of leadership on workplace bullying, there is little empirical evidence for the underlying mechanism, linking leadership with negative organizational outcomes (Mayer et al. 2010). Moreover, there is a dearth of empirical research examining destructive leadership. Comparatively, most research has examined constructive leadership style (Burke 2006). Thus, it was found that destructive leaders, who systematically and repeatedly infantilize, degrade, mistreat, and humiliate subordinates in public are more likely to create an organizational culture that disseminates negative values and stimulates others in the organizations to engage in negative behavior that includes workplace bullying. In this way, leaders are believed to have the ability to shape and influence organizational culture, which subsequently influences workplace bullying. This study also provides supporting theoretical evidence for this mediating relationship, by referring to the Social Learning Theory.

Second, the present study provides substantial contribution to the literature examining anti-bullying programs, by empirically assessing the effectiveness of HRM bullying prevention programs on workplace bullying, using the Negative Act Questionnaire as a measurement tool, unlike most empirical studies that rely on reported bullying incidents as a measurement tool of workplace bullying, the studies' main criticism was that it does not take into account the unreported bullying incidents; which thereby underestimates the scale of the problem.

Third, with regard to methodological contribution, the present study has developed a questionnaire to measure anti-bullying training. The questionnaire consists of seven questions that measure the existence and effectiveness of anti-bullying training programs used by organizations under scrutiny. The reliability and construct validity of the questionnaire were validated using the Reliability and Conformity factor analysis, and all instruments used in the study were translated into Arabic by a specialized translator. Accordingly, the translated versions of the instruments could be used in future Arabic context studies due to its validity and reliability.

4.2 Implications for HRM Practitioners

The present study also has some practical implications for HRM practitioners. First, the results of this study emphasize the importance of the role of leaders in shaping organizational culture, as well as inspiring subordinates to display and share acceptable standards and values. In addition, the present study highlights the importance of building a supportive organizational culture. Indeed, knowledge about

organizational culture will provide leaders and managers with a great insight into how to create an organizational environment, free from bullying. Hence, the actions taken by top management in response to workplace bullying send a clear message to organizational members regarding the acceptable prevailing culture. This holds an important message to HRM practitioners, to utilize several HRM functions, such as recruitment of future leaders and selection techniques that assess the candidates' ethics and moral standards. These techniques might include psychometric or integrity testing, structured interviewing, and/or assessment centers that question employee integrity and communication skills of leaders. Organizations can also provide regular training to leaders on several issues such as leadership and communication skills, besides providing training to organizational members on organizational culture and workplace bullying. Hence, by utilizing the selection and training functions, organizations are more likely to hire and develop effective leaders that act as role models, creating a culture of respect and dignity, thus inspiring subordinates to behave in the same way.

Moreover, organizations can develop a reward system that compensates or promotes leaders who support organizational culture, and helps in creating a positive work environment, as well as punishing or even terminating leaders who display negative bullying behaviors even if they are productive leaders. Organizations can also design a disciplinary system that punishes those who display negative behavior. Moreover, HRM professionals should regularly distribute questionnaires to organizational members to collect data regarding employees' perception of organizational culture, leadership, workplace bullying, etc. This will probably result in a much more substantial level of employee retention and commitment. Finally, the findings of the present study highlight the important role of anti-bullying training in the reduction of workplace bullying. In fact, the effort applied to reduce bullying should involve culture change, which should ideally begin with training (Altman 2010).

5 Limitations and Directions of Future Research

The present study, while contributing to HRM literature, faced some limitations. For instance, from the methodological point of view, the population of the present study consists of employees working in the insurance sector. Therefore, the results of the present study may not be generalized to other sectors.

The present study should be replicated in other industries such as the banking or tourism sector in order to generalize the results to other industries. Moreover, the design of the present study is cross-sectional; data was collected from respondents only once. However, it is possible that some aspects of HRM bullying prevention programs, and organizational factors and their impact on workplace bullying to be different at different time phases. Hence, future studies utilizing a longitudinal design are recommended to better understand the cause and effect relationships between all variables under the study. This method also will help in measuring the

effectiveness of the HRM bullying prevention program before and after the implementation of the program.

Furthermore, based on the result of the structural equation modeling which shows some mediating impact of organizational culture on the relationship between destructive leadership and workplace bullying relationship, future studies are recommended to measure the moderating impact of such relationship.

Finally, the present study considers only anti-bullying policy and anti-bullying training as important components of the HRM bullying prevention program. Future studies are recommended to investigate other prevention strategies, such as recruitment and selection, socialization, compensations and benefits, performance management, and promotion.

Appendices

Appendix 1: Conformity Factor Analysis—Workplace Bullying

	Components		
Scale	1	2	3
I am subjected to excessive teasing and sarcasm	0.743	−0.355	−0.091
I am humiliated or ridiculed in connection with my work	0.726	−0.327	0.103
My opinions are being ignored	0.678	0.139	0.283
There is a persistent criticism of my errors or mistakes	0.667	0.073	−0.463
I am subjected to shouting at or being the target of spontaneous anger intimidating behaviors such as finger-pointing, shoving, etc.	0.663	−0.323	−0.102
I am subjected to threats of violence, physical abuse, or actual abuse	0.651	−0.358	−0.143
I have a pressure not to claim something to which by right I am entitled (e.g., sick leave, holiday entitlement, travel expenses)	0.648	0.168	0.037
I am subjected to insulting or offensive remarks about my person, attitudes, or my private life	0.641	−0.341	0.016
There are hints or signals from others that I should quit my job	0.63	−0.124	−0.021
I am exposed to an unmanageable workload	0.595	0.324	−0.197
I have key areas of responsibility removed or replaced with more trivial or unpleasant tasks	0.588	−0.007	0.34
Others withhold information which affects my performance	0.575	0.303	0.365
There are gossips and rumors spreading about me	0.565	−0.162	0.258
I am given tasks with unreasonable deadlines	0.511	0.578	−0.139
There is an excessive monitoring of my work	0.458	0.503	−0.207
I am ordered to do work below my level of competence	0.479	0.275	0.57
I am always reminded of my errors or mistakes	0.541	0.122	−0.548

Source: Authors' own calculations

Appendix 2: Conformity Factor Analysis—Organizational Culture

	Components				
Scale	1	2	3	4	5
Accepted communication standards exist	0.723	−0.209	0.224	−0.18	0.187
People know about each other's personal lives	0.684	−0.213	0.208	−0.21	0.225
People help each other in job-related problems	0.679	−0.363	0.091	0.135	−0.24
People's well-being is important (social, economic, psychological, spiritual, or medical state)	0.656	0.206	−0.095	−0.26	0.224
Employees know one another	0.654	−0.345	0.274	−0.17	0.211
In tough situation there is a strong feeling of togetherness	0.646	−0.164	−0.051	0.332	−0.28
All important matters are discussed with each other inside the organization	0.632	−0.035	−0.078	0.289	−0.22
People are proud of their organization	0.628	0.213	−0.154	0.15	0.077
People are rewarded for their good work	0.613	0.328	−0.329	−0.12	0.185
Positive changes constantly take place	0.59	0.419	−0.123	0.003	0.086
Everyone has a big freedom of activity	0.534	0.377	−0.069	0	−0.17
People are not afraid of making mistakes	0.206	0.537	0.449	−0.27	−0.17
People know about each other's hobbies and out-of-work activities	0.386	−0.391	0.136	0.027	−0.04
Superiors ignore their power while communicating with employees	0.175	0.328	0.617	0.371	−0.28
People concentrate more on their own needs than on the goals of the organization	−0.437	0.095	0.564	0	0.322
In case of mistakes one feels embarrassed by the other members of the organization	0.033	0.094	0.009	0.693	0.622

Source: Authors' own calculations

Appendix 3: Conformity Factor Analysis—Destructive Leadership

	Components	
Scale	1	2
My boss openly degrades and/or personally attacks me	0.864	−0.204
My boss is deliberately rude to me	0.86	−0.075
My boss is discourteous toward me	0.845	0.154
My boss treats me like a servant	0.802	−0.392

Scale	Components	
	1	2
My boss deliberately makes me feel inferior	0.795	−0.086
My boss mistreats me because of my lifestyle	0.788	−0.231
My boss believes that I am generally inferior, and blames me whenever something goes wrong	0.772	0.076
My boss shows no regard for my opinions	0.77	0.112
My boss displays anger publicly toward me by shouting, cursing, and/or slamming objects	0.864	−0.204
My boss is tougher on some subordinates because he/she dislikes them regardless of their work	0.86	−0.075
My boss humiliates me in public	0.845	0.154
My boss treats me unfairly at times for no apparent reason	0.802	−0.392
My boss deliberately withholds information from me that I need to perform my job	0.795	−0.086

Source: Authors' own calculations

Appendix 4: Conformity Factor Analysis—Anti-bullying Policy

Scale	Components	
	1	2
The bullying/aggressiveness policy states what victim of bullying should do (tell direct manager or HR)	0.88	−0.221
The bullying/aggressiveness policy states how management responds to a report of bullying	0.841	−0.346
The definition makes it clear that bullying/aggressiveness will be subject to a disciplinary action	0.837	0.171
The policy discusses what action will be taken if the bullying/aggressiveness persist	0.809	−0.405
The definition makes it clear that bullying/aggressiveness is a negative/unwanted behavior	0.781	0.392
The policy has a definition of bullying/aggressiveness	0.749	0.492
The bullying/aggressiveness policy mentions any of the encouraging cooperative behavior, rewarding good behavior, improving workplace climate, or creating a safe environment	0.729	−0.498
In my organization, there is a policy on workplace bullying/aggressiveness	0.684	0.524

Source: Authors' own calculations

Appendix 5: Conformity Factor Analysis—Anti-bullying Training

	Components
Scale	1
The bullying/aggressiveness training demonstrates appropriate, acceptable behavior in workplace versus inappropriate/unacceptable behavior	0.907
Management ensures that all employees receive the bullying/aggressiveness training required to understand their obligation in relation to bullying/aggressiveness	0.897
The bullying/aggressiveness training mentions the prevention strategies taken by the organization to prevent bullying/aggressiveness	0.895
The bullying/aggressiveness training encourages employees to report incidents of bullying	0.885
The organization provides time and resources to employees to participate in the bullying/aggressiveness training	0.88
The organization provides material to practitioners such as course outline, hand-out, course notes, or learning outcomes	0.86
This organization provides regular training as a proactive (preventive) strategy to reduce workplace bullying/aggressiveness	0.838

Source: Authors' own calculations

Appendix 6: Full Research Questionnaire

Please circle the response which most describes the extent to which you agree or disagree with the following statements?

To what extent do you agree or disagree with each statement?	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Workplace bullying					
Others withhold information which affects my performance	1	2	3	4	5
I am ordered to do work below my level of competence	1	2	3	4	5
My opinions are being ignored	1	2	3	4	5
I am given tasks with unreasonable deadlines	1	2	3	4	5
There is an excessive monitoring of my work	1	2	3	4	5
I am under pressure not to claim something to which by right I am entitled (e.g., sick leave, holiday entitlement, travel expenses)	1	2	3	4	5

To what extent do you agree or disagree with each statement?	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I am exposed to an unmanageable workload	1	2	3	4	5
I am humiliated or ridiculed in connection with my work	1	2	3	4	5
I have key areas of responsibility removed or replaced with more trivial or unpleasant tasks	1	2	3	4	5
There are gossips and rumors spreading about me	1	2	3	4	5
I am subjected to insult or offensive remarks about my person, attitudes or my private life.	1	2	3	4	5
There are hints or signals from others that I should quit my job	1	2	3	4	5
I am always reminded of my errors or mistakes	1	2	3	4	5
There is a persistent criticism of my errors or mistakes	1	2	3	4	5
I am subjected to excessive teasing and sarcasm	1	2	3	4	5
I am subjected to shouting at or being the target of spontaneous anger intimidating behaviors such as finger-pointing, shoving, etc.	1	2	3	4	5
I am subjected to threats of violence, physical abuse, or actual abuse	1	2	3	4	5
Organizational culture					
People are proud of their organization	1	2	3	4	5
People are rewarded for their good work	1	2	3	4	5
Everyone has a big freedom of activity	1	2	3	4	5
People are not afraid of making mistakes	1	2	3	4	5
Positive changes constantly take place	1	2	3	4	5
Superiors ignore their power while communicating with employees	1	2	3	4	5
People concentrate more on their own needs than on the goals of the organization	1	2	3	4	5
People's well-being is important (social, economic, psychological, spiritual, or medical state)	1	2	3	4	5
Employees know one another	1	2	3	4	5
Accepted communication standards exist	1	2	3	4	5
People know about each other's personal lives	1	2	3	4	5
In case of mistakes one feels embarrassed by the other members of the organization	1	2	3	4	5

To what extent do you agree or disagree with each statement?	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
In tough situation there is a strong feeling of togetherness	1	2	3	4	5
People know about each other's hobbies and out-of-work activities	1	2	3	4	5
People help each other in job-related problems	1	2	3	4	5
All important matters are discussed with each other inside the organization	1	2	3	4	5
Destructive leadership					
My boss treats me unfairly at times for no apparent reason	1	2	3	4	5
My boss deliberately withholds information from me that I need to perform my job	1	2	3	4	5
My boss humiliates me in public	1	2	3	4	5
My boss believes that I am generally inferior, and blames me whenever something goes wrong	1	2	3	4	5
My boss treats me like a servant	1	2	3	4	5
My boss displays anger publicly toward me by shouting, cursing, and/or slamming objects	1	2	3	4	5
My boss is tougher on some subordinates because he/she dislikes them regardless of their work	1	2	3	4	5
My boss is discourteous toward me	1	2	3	4	5
My boss shows no regard for my opinions	1	2	3	4	5
My boss is deliberately rude to me	1	2	3	4	5
My boss openly degrades and/or personally attacks me	1	2	3	4	5
My boss mistreats me because of my lifestyle	1	2	3	4	5
My boss deliberately makes me feel inferior	1	2	3	4	5
Bullying policy					
In my organization, there is a policy on workplace bullying/aggressiveness	1	2	3	4	5
The policy has a definition of bullying/aggressiveness	1	2	3	4	5
The definition makes it clear that bullying/aggressiveness is a negative/unwanted behavior	1	2	3	4	5
The definition makes it clear that bullying/aggressiveness will be subject to a disciplinary action	1	2	3	4	5

(continued)

To what extent do you agree or disagree with each statement?	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The bullying/aggressiveness policy states what victim of bullying should do (tell direct manager or HR)	1	2	3	4	5
The bullying/aggressiveness policy states how management responds to a report of bullying	1	2	3	4	5
The policy discusses what action will be taken if the bullying/aggressiveness persist.	1	2	3	4	5
The bullying/aggressiveness policy mention any of the encouraging cooperative behavior, rewarding good behavior, improving workplace climate, or creating a safe environment	1	2	3	4	5
Anti-bullying training					
This organization provides regular training as a proactive (preventive) strategy to reduce workplace bullying/aggressiveness	1	2	3	4	5
The organization provides material to practitioners such as course outline, handout, course notes, or learning outcomes	1	2	3	4	5
The organization provides time and resources to employees to participate in the bullying/aggressiveness training	1	2	3	4	5
Management ensures that all employees receive the bullying/aggressiveness training required to understand their obligation in relation to bullying/aggressiveness	1	2	3	4	5
The bullying/aggressiveness training demonstrates appropriate, acceptable behavior in workplace versus inappropriate/unacceptable behavior	1	2	3	4	5
The bullying/aggressiveness training encourages employees to report incidents of bullying	1	2	3	4	5
The bullying/aggressiveness training mentions the prevention strategies taken by the organization to prevent bullying/aggressiveness	1	2	3	4	5

Source: Authors' own calculations

References

Alswaid, E. (2014). *Workplace bullying among nurses in Saudi Arabia: An exploratory qualitative study*. Master of management thesis. Massey University.

Altman, B. A. (2010). Workplace bullying: Application of Novak's (1998) learning theory and implications for training. *Employee Responsibilities and Rights Journal, 22*(1), 21–32.

Appelbaum, S., Semerjian, G., & Moha, K. (2012). Workplace bullying: Consequences, causes and controls (part two). *Industrial and Commercial Training Journal, 44*(6), 337–344.

Ashforth, B. E. (1997). Petty tyranny in organizations: A preliminary examination of antecedents and consequences. *Canadian Journal of Administrative Science, 14*(2), 126–140.

Aubrey, D. W. (2012). *The effect of toxic leadership*. Master thesis. United States Army War College.

Bentley, A., Catley, B., Thomas, H. C., Gardner, D., Driscoll, M. P., Dale, A., & Trenberth, L. (2012). Perceptions of workplace bullying in the New Zealand travel industry: Prevalence and management strategies. *Journal of Tourism Management, 33*, 351–360.

Burke, R. J. (2006). Why leaders fail: Exploring the dark side. *International Journal of Manpower, 27*(1), 91–100.

Claybourn, M. (2011). Relationships between moral disengagement, work characteristics and workplace harassment. *Journal of Business Ethics, 100*, 283–301.

Coldwell, S. J. (2013). *Addressing workplace bullying and harassment in Canada: Research, legislation, and stakeholder overview: Profiling a union program*. Seminar paper. JILPT seminar on workplace bullying and harassment, 2013 (12).

Cowan, R. L. (2009). *Walking the tightrope: Workplace bullying and the human resources professional*. Doctoral dissertation. Texas A&M University.

Cowie, H., Naylor, P., Rivers, I., Smith, P. K., & Pereira, B. (2002). Measuring workplace bullying. *Journal of Aggression and Violent Behavior, 7*, 33–51.

D'Cruz, P., & Noronha, E. (2009). The exit coping response to workplace bullying: The contribution of inclusivist and exclusivist HRM strategies. *Journal of Employee Relations, 32*, 102–120.

Daniel, T. A. (2009). *Tough boss or workplace bully? A grounded theory study of insight from human resources professionals*. Doctoral dissertation. Fielding Graduate University.

Denison, D., Janovics, J., Young, J., & Cho, H.J. (2006). *Diagnosing organizational cultures: Validating a model and method*. Working paper, International Institute for Management Development, Lausanne, Switzerland.

Einarsen, S. (2000). Harassment and bullying at work: A review of the Scandinavian approach. *Journal of Aggression and Violent Behavior, 5*, 379–401.

Einarsen, S., Aasland, M. S., & Skogstad, A. (2007). Destructive leadership behaviour: A definition and conceptual model. *The Leadership Quarterly, 18*, 207–216.

Einarsen, S., Hoel, H., & Notelae, G. (2009). Measuring exposure to bullying and harassment at work: Validity, factor structure and psychometric properties of the Negative Acts Questionnaire – Revised. *Journal of Work and Stress, 23*, 24–44.

Elçi, M., Şener, I., & Alpkan, L. (2013). The Impacts of ethical leadership on the antisocial behavior of employees: The mediating role of ethical climate. *Journal of Global Strategic Management, 14*, 57–66.

Ferris, P. (2004). A preliminary typology of organisational response to allegations of workplace bullying: See no evil, hear no evil, speak no evil. *British Journal of Guidance and Counseling, 32*, 389–395.

Financial Regulatory Authority. (2014). *Insurance* [online]. Accessed July 26, 2017, from http://www.efsa.gov.eg/content/efsa_en/eisa_pages_en/main_eisa_page_en.htm

Fleet, D. V., & Griffin, R. W. (2006). Dysfunctional organization culture. *Journal of Managerial Psychology, 21*(8), 698–708.

Florea, N. V., Goldbach, L. R., & Goldbach, F. C. (2011). Relationships between human resources management and organizational culture. *Proceedings of the European conference on*

management, leadership & governance. SKEMA Business School, Sophia-Antipolis, France (6–7 October).

Georgakopoulos, A., Wilkin, L., & Kent, B. (2011). Workplace bullying: A complex problem in contemporary organizations. *International Journal of Business and Social Science, 2*(3), 1–20.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). New Jersey: Prentice Hall.

Harvey, M., Treadway, D., & Heames, J. T. (2006). Bullying in global organizations: A reference point perspective. *Journal of World Business, 41*, 190–202.

Hoel, H., & Cooper, C. (2000). *Destructive conflict and bullying at work* [online]. Accessed June 15, 2014, from http://www.adapttech.it/old/files/document/19764Destructiveconfl.pdf

Hoel, H., & Giga, S. (2006). *Destructive conflict in the workplace: The effectiveness of management intervention*. Unpublished report. Manchester Business School.

Hoel, H., Glaso, L., Hetland, J., Cooper, C. L., & Einarsen, S. (2010). Leadership style as predictor of self-reported and observed workplace bullying. *British Journal of Management, 21*(2), 453–468.

Hornstein, H. A. (1996). *Brutal bosses and their prey: How to identify and overcome abuse in the workplace*. New York: Riverhead Books.

Leymann, H. (1990). Mobbing and psychological terror at workplaces. *Journal of Violence and Victims, 5*(1), 119–126.

Leymann, H. (1996). The content and development of mobbing at work. *European Journal of Work and Organizational Psychology, 5*(2), 165–184.

Mayer, D. M., Kuenzi, M., & Greenbaum, R. L. (2010). Examining the link between ethical leadership and employee misconduct: The mediating role of ethical climate. *Journal of Business Ethics, 95*, 7–16.

Mitchell, M. S., & Ambrose, M. L. (2007). Abusive supervision and workplace deviance and the moderating effects of negative reciprocity beliefs. *Applied Psychology, 92*(4), 1159–1168.

Parcham, E., & Ghasemizad, A. (2017). The impact of organizational culture on employees' organizational silence in Shiraz University of medical sciences. *Journal of Health, Management, and Informatics, 4*(1), 26–30.

Pate, J., & Beaumont, P. (2010). Bullying and harassment: A case of success? *Employee Relations, 32*(2), 171–183.

Rai, A., & Agarwal, U. A. (2016). Workplace bullying: A review and future research directions. *South Asian Journal of Management, 23*(3), 01–31.

Rayner, C., & Lewis, D. (2011). Managing workplace bullying: The role of policies. In S. Einarsen, H. Hoel, D. Zapf, & C. L. Cooper (Eds.), *Bullying and harassment in the workplace* (pp. 327–340). London: CRC Press.

Salancik, G. R., & Pfeffer, J. (1978). A social information processing approach to job attitudes and task design. *Administrative Science Quarterly, 23*, 224–253.

Salin, D. (2003). Ways of explaining workplace bullying: A review of enabling, motivating and precipitating structures and processes in the work environment. *Human Relations, 56*(10), 1213–1232.

Salin, D. (2008). The prevention of workplace bullying as a question of human resource management: Measures adopted and underlying organizational factors. *Journal of Science Direct, 24*, 221–231.

Sandvik, P. L., Namie, G., & Namie, R. (2009). Workplace bullying: Causes, consequences, and corrections. In P. Lutgen-Sandvik & B. D. Sypher (Eds.), *Destructive organizational communication* (pp. 27–52). New York: Routledge Press.

Sims, R. R., & Brinkmann, J. (2002). Leaders as moral role models: The case of John Gutfreund at Salomon Brothers. *Journal of Business Ethics, 35*, 327–339.

Smith, P. K., Smith, C., Osborn, R., & Samara, M. (2008). A content analysis of school anti-bullying policies: Progress and limitations. *Journal of Educational Psychology in Practice, 24*, 1–12.

Soylu, S. (2011). Creating a family or loyalty-based framework: The effects of paternalistic leadership on workplace bullying. *Journal of Business Ethics, 99*, 217–231.

Tambur, M., & Vadi, M. (2012). Workplace bullying and organizational culture in a post-transitional country. *International Journal of Manpower, 33*(7), 754–768.

Thomas, H., Gardner, D., O'Driscoll, M., Catley, B., Bentley, T., & Trenberth, L. (2013). Neutralizing workplace bullying: The buffering effects of contextual factors. *Managerial Psychology, 28*(4), 384–407.

Tsuno, K., & Kawakami, M. (2014). Multifactor leadership styles and new exposure to workplace bullying: A six-month prospective study. *Industrial Health, 53*, 139–151.

Vadi, M., Allik, J., & Realo, A. (2002). *Collectivism and its consequences for organizational culture*. Research Article, University of Tartu [online]. Accessed February 15, 2013, from http://www.mtk.ut.ee/sites/default/files/mtk/RePEc/mtk/febpdf/febawb12.pdf

Vartia, M. (2013). *Workplace bullying and harassment in the EU and Finland*. Seminar paper, JILPT seminar on workplace bullying and harassment. 2013, no. 12.

Wheeler, A. R., Halbesleben, J. R., & Shanine, K. (2010). Eating their cake and everyone else's cake, too: Resources as the main ingredient to workplace bullying. *Business Horizons, 53*, 553–560.

Wilson, T. (2010). *Workplace aggression behaviors, organizational justice, and intention to leave among U.S. telecommunications workers*. PhD. Lynn University, Proquest Database, UMI 3406165.

Zapf, D. (1999). Organizational, work group related and personal causes of mobbing/bullying at work. *International Journal of Manpower, 20*(1), 70–80.

Part II
Management

Importance of Management Function Control in Slovak Companies

Juraj Misun and Ivana Misunova Hudakova

Abstract In management theory, the control function is considered the terminal function in management. Also due to its status as the last step of the management process, it is the least researched function. Another approach states that control accompanies the other functions, and one of its tasks is to influence them to work more efficiently and effectively. Based on our questionnaire survey, we analyze the perceived importance of controlling in companies operating in the Slovak Republic on various aspects such as the size of the enterprise, the level of the respondent's management, or the subject of business activity. The overwhelming majority of respondents consider controlling important or very important. The larger the company, the more important is the control function perceived. In addition, the higher the manager is situated in company's hierarchy, the more important controlling is considered. An interesting exception is micro-entrepreneurs.

Keywords Organizational control · Management function · Controlling · Planning · Organizing · Staffing · Leading

1 Introduction[1]

Control is a word that, from a psychological point of view, can cause very negative feelings due to the expectation of negative consequences. It accompanies us all our life and we can rarely avoid it. Each of us encounters many of controls in his or her

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[1]Selected portions from this chapter have been previously included in [Misun, J., 2017. Changes in management function of control. In: *International Conference SocioEconomic Perspectives in the Age of XXI Century Globalization*. Tirana: University of Tirana, Faculty of Economy, Department of Economics, pp. 204–217.]

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life. These controls examine a certain aspect of his or her condition or progress. Whether our doctors, teachers, employers, accidental or deliberate police officers are controlling us, control is part of our existence. Although we feel mostly bad being controlled, many of us know that control helps us grow, learn from our own mistakes, or provides us with a safety net to avoid real losses.

According to Tsoukas (1994), there are four different perspectives on management: (a) management functions with three schools (classical, systems approach, and historical approach school); Whitley's (1987, 1989) management task characteristics; (c) Mintzberg's (1973, 1975) management roles; and (d) management control perspective, which is taking the institutional context by virtue of which management is made possible into account. Even, there are several conceptualizations of managerial work, yet "the classical functions still represent the most useful way of conceptualizing the manager's job, especially for management education" (Carroll and Gillen 1987). There are many differences in content and the subject of managerial functions among theoretical authors (i.e., staffing is not included; leading is called directing or substituted with influencing; coordinating or regulating as separate functions). Nowadays, management functions are—in one of the concepts—divided into two groups: sequential functions (planning, organizing, staffing, leading, controlling) and parallel functions (analyzing, decision-making, implementing). While the former follow on each other, the latter are accompanying them most of the time.

"The managerial function of control comes at the end of a chain of the other major functions (…). That is why a chapter on control is almost always found toward the end of most management textbooks" (Hitt et al. 2012, p. 387). It focuses on determining whether the set targets have been achieved and, if not, it provides the tools to achieve them. Controlling is important because it complements other management functions (Medina 2006).

During our research of management control function, we have discovered significant differences between the eastern and western theory. This has motivated us to examine the importance of control as one of the aspects of management control by different characteristics. This chapter contributes to the theory with a view on control from a country that historically placed great emphasis on formal control.

The chapter has the following structure: in the theoretical part we describe the basic aspects of control, the relation of this function of management to other functions and the fundamental differences between the eastern and the western control theory. In the methodology section, we are focusing on the research methods used and the description of the research sample. In the research results we analyze the results of the questionnaire survey according to the individual characteristics of the research sample. In conclusion, we summarize the most important findings, present additional research opportunities, and our expectations of further development.

2 Theoretical Background

2.1 Control Function of Management

"Any meaningful human activity needs a certain degree of control if it is to achieve what it intended" (Misun 2017, p. 206). From time to time, a human being verifies where he/she is in relation to his/her goal. The sooner he/she does, the more he/she will be sure he/she is on the right track. Frequent verification can ensure that redirecting to the right course prevents the loss of resources and efforts (Boddy 2008; Misun 2017).

"Controlling is a fundamental aspect of an organization that has been largely neglected by scientists for several decades" (Misun 2017, p. 206). Through control systems, managers are trying to reconcile employees' abilities, activities and performance with the goals and aspirations of their organization. Despite the fundamental nature of this phenomenon, its importance and some significant progress, this scientific area is still neglected. Specifically, control is poorly captured in its constructs, determinants, and effects (Sitkin et al. 2010; Misun 2017). It should be clear that, with its primary characteristics, which are feedback and corrective action, control is an essential and integral part of the role of management. Without control, there can be no management (Eilon 1971; Misun 2017).

Controlling plays an important role in management of a company, but unlike machines, equipment, finances, or people, its role is often hidden from the sight of others (Misun 2017). When we look at the organizational structure, we see it as a scheme of organization. Unfortunately, there is nothing to help us visualize the organization's control system (Flamholtz 1996; Misun 2017). Controlling is a constantly ongoing process of designing standards, measuring performance, comparing the performance with standards, and implementing corrective actions to ensure effective and efficient running of the organization's activities. Through controlling, every manager aims to increase the predictability of future developments and results. While the post-bureaucratic organizational world is built on trust and empowerment, McKenna et al. (2010) doubt that management is really possible without control, since there are new fears of losing control.

There are six major purposes of controls (they make plans effective; they make sure that organizational activities are consistent; they make organizations effective; they make organizations efficient; they provide feedback on project status; they aid in decision-making (Benowitz 2001) and four critical dimension of control (it is oriented to goals; it relates to a lack of goal congruence; it refers to a process; and it is probabilistic (Flamholtz 1996).

Very important terms in control are efficiency and effectiveness, through which managers are trying to achieve their goals. Effectiveness is interested in achieving goals; that means the action is effective to the extent if the intended was achieved. Efficiency is interested in achieving the result with minimal use of resources (Emmanuel et al. 1990; Misun 2017).

The theory of control can be divided into four periods: prehistory of control theory (before 1868); primitive period (between 1868 and the early twentieth century); classic period (the early twentieth century to 1960); and the modern period of control theory (from 1960 to the present) (Lewis 1992). During these periods, our society went through periods of agriculture, mechanics, steam engines, electrification, booming of electronics, and the penetration of computer systems into ordinary people's lives (Wang and Liu 2008).

The managerial role of controlling has often been mistakenly considered to be synonymous with financial control. Being equated with budgets and financial ratios, controlling has been "frequently regarded as the sole domain of the accountant or comptroller" (Giglioni and Bedeian 1974). Forty years later we still find traces of such misinterpretation. According to our research, dozens of Central and Eastern European authors assume that the controller's work can be simply referred as controlling in English. Notwithstanding the dozens of high-cited basic management textbooks, which label one of the basic management functions with controlling. An example of such misinterpretation is: "In a time of global recession, controlling, as an expert and neutral support to managers when making decisions and managing businesses, is finally recognized as an area which deserves attention" (Pološki Vokić 2012).

In further development in control theory we are looking in the near or far future forward to control systems that are able to cope and maintain acceptable performance levels under significant unanticipated uncertainties and failures; systems that exhibit considerable degrees of autonomy; autonomous underwater, land, air, and space vehicles; highly automated manufacturing; intelligent robots; highly efficient and fault-tolerant voice and data networks; reliable electric power generation and distribution; seismically tolerant structures; and highly efficient fuel control for a cleaner environment (Department of Electrical Engineering 2014).

2.2   Controlling and Other Management Functions

Controlling has numerous interactions with all managerial functions, both sequential and parallel. In all cases, these relationships are reciprocal, i.e., controlling affects other managerial functions, and these in turn affect controlling and its quality. Controlling has an important and special position among all managerial functions. Without it a business would not work efficiently, it would not improve or move forward (Kracmar et al. 2013).

All management functions are interconnected and dependent on each other. Much of the controlling is based on planning, but this does not mean that other management functions play no role in the control system of an organization. In fact, planning and control are two ends of an integrated management system. In the control system, information and activities are key aspects. Information is a guide and activity is the essence of control. Other management functions help in various ways of gathering information and performing activities (Rudani 2013).

If major problems exist in other managerial functions, almost no amount of attention to controlling is likely to work very well. Therefore, controlling depends heavily on the other functions, which precede it and need to work well, so controlling can work properly (Hitt et al. 2012).

"Control can also be thought of as an independent or causal, variable because the results of control efforts improve the planning process of the organization. Control is thus part of a feedback loop into planning and organizing that can help adapt to changing circumstances and conditions" (Bagad 2009, pp. 5–8).

In some cases, controlling is also referred to as a terminal managerial function because it takes place after the other functions have been completed. Controlling helps to evaluate how well these functions have been done. At the same time it also evaluates the effectiveness of the organization's control system. It is important because it helps managers to evaluate whether all the key management functions have been implemented (Dubrin 2012).

Controlling may appear to be the last phase of the management process, but it does not correspond to reality. It is a truly dynamic function and is closely related to the other functions. Its corrective actions may include a review of objectives, strategies, procedures, plans, organizational structure, etc. This aspect of controlling establishes the interaction relationship between it and other management functions. Planning, organizing, staffing, and leadership aim to perform certain activities. Vice versa, controlling is intended to ensure that the activities are carried out as managers want. Organizing, staffing, and leading "provide resources, facilities, environment and mechanism for the implementation of plans, and achievement of the desired objectives. "Controls ensure that plans are being implemented and goals achieved effectively and efficiently" (Agarwal 1982, pp. 245–246). "Even though control is merely one element in a management system, (...) it is the one that most significantly contributes to improving organizational performance" (Carenys 2010, pp. 41–42).

2.3 Western and Eastern Approach to Controlling

"Although the current management theory may appear to be globally identical, there are large differences in the control function" (Misun 2017, p. 208). (The differences between the Western and Eastern approaches to controlling are more detailed described in our second chapter entitled "The right dealing with power—being the one who controls".)

Probably the biggest difference between the Western and Eastern approach to control can be found in the concept of internal and external control. The same meaning, both in Western and Eastern approach, has the concept of internal and external audit. For an external audit, the subject and object do not come from the same system and are independent of each other. However, internal control in Western approach is strongly influenced by internal auditing, while in the Eastern Bloc, the audit did not began to actually develop until the early 1990s.

In the Western approach, an extensive body of research surrounding the central construct of locus of control has developed, since Rotter (1954) first introduced his theory of social learning. While the perceived internal locus of control believes one's personal belief has influence over outcomes through his skills, abilities, and efforts; the external locus of control believes that external forces can control outcomes (Kaufmann et al. 1995). In the Eastern approach, "control can be classified as external control and internal control from the perspective of control subject" (Zhang 2014, p. 45). External control means that the controllers are from the outer environment of the organization (subject and object come from different organizations). Examples include controls from government sector, financial control, taxation control, government audit control, etc.

3 Methodology

Our presented research results are coming from a questionnaire survey, which collected data at the turn of 2016 and 2017. Questionnaire's emphasis was on new trends in organizational control, as it represented the first questionnaire, the results of which should serve the needs of such a newly approved research project.

Overall, 395 completed questionnaires were received, of which 376 were further processed. Nineteen questionnaires were excluded for various reasons. The sample does not represent statistical representativeness for the Slovak Republic but is compatible with its parameters.

Since several respondents from the same company were allowed for the purpose of the research project, further selection is needed for the purposes of this chapter. In order to exclude questionnaires from the same companies, we always chose the highest ranked manager in the hierarchy for whom we expect the best knowledge of our subject. Subsequently, 331 questionnaires were left for further processing.

Our research sample has the following characteristics ($n = 331$):

– Size of company (employees in 2015): 115 micro-enterprises, 90 small, 56 medium-large, 70 large companies.
– Management level of the respondent: 120 top management, 52 middle, 116 lower management level, 43 informed employees (Although they do not hold a managerial position, "informed employees" represent an important part of our research sample as they have access to rare business information. Included are accounting officers, economists and employees directly responsible for the control function (without being managers)).
– Most frequently represented sections according to the SK-NACE classification: 69 industrial production, 66 wholesale and retail trade and repair of motor vehicles and motorcycles, 46 professional scientific and technical activities, 25 information and communication, 21 accommodation and catering services.

– Higher territorial unit of Slovak Republic: 174 Bratislava (capital city and surrounding districts), 33 Trnava, 24 Nitra, 23 Trenčín, 30 Žilina, 17 Banská Bystrica, 22 Prešov, 8 Košice.
– Legal form: 222 private limited liability companies, 66 joint-stock companies, 30 self-employed individuals, 5 branches of a foreign enterprise, 4 cooperatives, 4 other legal forms.
– Economic result in 2015: 254 profit, 52 loss, 20 balanced economic result, 3 companies founded in 2016, 2 n/a.
– Sales in 2015: 164 $\leq$ 2 M Euro, 43 2 M $\leq$ 10 M Euro, 60 10 M $\leq$ 50 M Euro, 50 $\geq$ 50 M Euro, 14 n/a (Misun 2017).

Besides various other question, using a scale of five possible levels, respondents had to evaluate the importance of the managerial function controlling in their company. We also asked the respondents for a short justification. The scale consisted of the following possible answers: 1—absolutely unimportant, 2—little important, 3—present, 4—important, 5—very important. All 331 respondents answered this specific scale, and only in 17 cases the respondents did not stated a justification for their choice. These justifications (in various questions) also helped us to resolve questionnaires from inadequately competent respondents. We used standard scientific methods in evaluating and interpreting the results of our questionnaire surveys.

4   Research Results

First, we present the overall results of the importance of controlling for the whole sample of the questionnaire survey. The largest group, 142 respondents, stated the managerial function of control is "very important" for their business. The second most numerous group of respondents (133) considers controlling as "important" in their business. The neutral group, which perceives controlling in their business as "present," had 43 members in our sample. "Little important" was controlling according to our respondents in 12 companies and only one respondent stated that controlling is in his enterprise "absolutely unimportant." If we change the verbal rating to a scale of one (absolutely unimportant) to five (very important), the average value reached 4.21, the mode value 5, and the median value 4. The percentage expression of individual responses is shown in Fig. 1.

In this chapter, we will not pay much attention to respondents or companies who have stated that the managerial function of control is "very important" or "important" in their business. Examples of justifications with respondents' descriptions for the two highest answers are listed in Table 1 in rows 1–9.

We would like to focus our attention on the single answer, where the respondent said that control in his company is "absolutely unimportant" (Table 1, row 15). The respondent justifies his choice mainly by the size of the business. However, in the next sentences he admits that the director, as well as himself—his deputy, are paying enough attention to controlling to ensure satisfying results. In addition, it is clear that

Fig. 1 Importance of management function control in Slovak companies. Source: own work
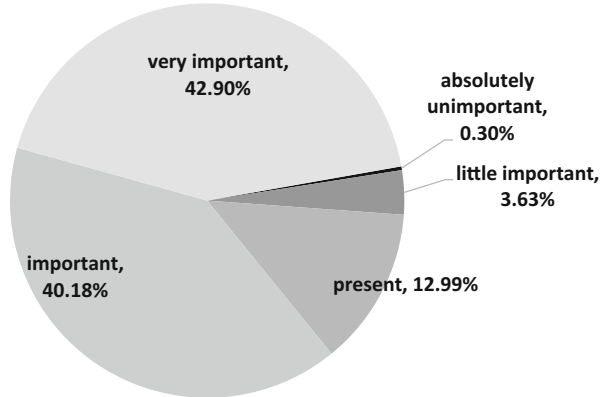
neither of them is relying on output control. They use concurrent control that ensures loss reduction, as the process is monitored, not just the result.

If we use other question from our questionnaire, we obtain more insight. This respondent has a neutral attitude to exercising control: "Although I do not like to control and reproach the mistakes people responsible for the products, I know that this is essential for product quality and for maintaining quality and, ultimately, for the good name of the company." In addition, he has a positive attitude, when he is exposed to control: "I am glad to know where I make mistakes, because thanks to that I can move forward as well as the whole company." No new tools, methods, or techniques of control have been introduced in his company, since "management control procedures in our company are working well; we have no reason to introduce new tools, methods or procedures." In addition, there was no need to increase his control efforts in this company: "Until now, the management has not seen the need to increase the quality control, has not received complaints from suppliers, customers, and has also not noticed a reduction of quality of our products."

All of these answers not only assure us that this respondent is a competent manager, but also that the importance of controlling in his company is greater than he can admit himself.

The next group for a deeper analysis is the "little important" group which consists of 12 respondents. The most important characteristic of this group is that it consists mainly of micro-enterprises (8) and small enterprises (3). Ten companies fall under the category of limited liability companies, nine were profitable in 2015 and most of the respondents in this group have a neutral attitude to exercising control (9) and to being exposed to control (9). In five of the companies we see a rise of importance of controlling in the near future, since there have been changes in controlling in the past year. Moreover, three companies of this group implemented a new tool, method, or technique in control. Six out of 12 respondents had to increase intensity of their control efforts, and 6 others were exposed to increased control by a higher-level subject. The most frequent justification concerned a small enterprise size (6), two justifications expect a separate controller job to increase the importance of control, and two other refer to concurrent control in the company.

Table 1 Examples of justifications in importance of controlling in Slovak companies

	Importance	Justification	Respondent description
1.	Very important	The manager is responsible for delivering the required services and the operation of the individual elements in the building. From this point of view, the control of the manager is necessary in order to avoid any technical shortcomings or failures, to prove the elimination of the problem, in the ideal case preventative measures prevent a deficiency (compliance control of planned maintenance)	Area Facility Manager of a small reality office from Bratislava
2.	Very important	Our company has a strict hierarchy of relationships, many processes that follow and their amount is really big, so it is very important to check every part of the company	Head of the department store of a large retail company from Bratislava
3.	Very important	Without control everyone is doing what he wants, workers need to be aware that they are constantly controlled. This increases their performance	Service manager of a large wholesale company from Žilina unit
4.	Very important	In our industry, the implementation of the ISO control system is very important. Practically, an uncertified company has little chance of succeeding in the market. As a result, the quality management function is very important and the system is also required	Quality Manager of a medium-sized manufacturer of plastic products from Bratislava
5.	Very important	Although we are a small company, we are shipping material for large construction projects where accuracy is very important. There is no possibility for a driver to arrive later or to bring in another material, or in a different amount. If an enterprise wants to work on a long-term basis, it must have effective control	Owner of a small wholesale company from Trnava unit
6.	Very important	In the food industry, timely control of all processes, both manufacturing and decision-making, is important, since the object of the activity is the processing of fast-moving and fast-breaking raw material, where an untimely and inadequate control process can have a negative impact on the company's performance	Purchasing and controlling manager of a medium-sized agrifood company from Trnava unit

(continued)

Table 1 (continued)

|	Importance	Justification	Respondent description
7.	Important	Controlling the whole activity of employees or production is very important in every direction. It is not right to be directive, but control is needed. How else can shortcomings be found?	Superior manager of a large electronics manufacturer from Žilina unit
8.	Important	Control is of particular importance to us in the entry and exit of production, the production process and the management of employees is less important due to self-control	Owner of a small installation company from Trenčín unit
9.	Important	The control in the case of the performance of economic services and connoisseur activities is always to be addressed. In particular because of possible sanctions in case of errors and inaccuracies	Executive of an accounting micro-enterprise from Bratislava
10.	Present	Our company works internally on the basis of trust and therefore controls are not our priority	Executive of a medium-sized casting company from Trenčín unit
11.	Little important	We do not have such a function in the company. It is done by several managers along with their other functions	Commercial manager of a medium-sized wholesale company from Nitra unit
12.	Little important	The managerial function of control is of little importance in the company, which is also evidenced by the fact that it is not separately allocated, but it is exercised, as well as other managerial functions, directly by the directors of the company	Executive of a small wood processing company from Prešov unit
13.	Little important	Control does not reveal all working processes—it is not possible to measure everything within the time horizon	Chief accountant of an accounting micro-enterprise from Trnava unit
14.	Little important	My work position is only formal. My role in the company is to control and compare the performance of our company with the competition and market development, but thanks to teamwork, other employees also do this. Our positions in the company differ only by specifying specific skills in the field in which we work	Unspecified manager of a retail micro-enterprise from Bratislava
15.	Absolutely unimportant	We are a small family business, so we do not have such a position at all and we consider it as unnecessary. All problems and errors in production are solved by the Director and myself as Deputy Director	Deputy director of a plastic parts producing micro-enterprise from Trnava unit

Source: own work
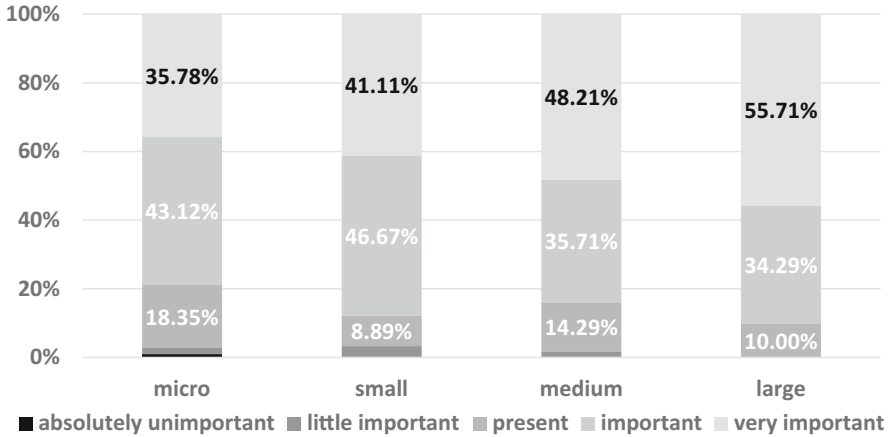
Fig. 2 Importance of controlling in companies (size of enterprise). Source: own work

In this respect, it is good to look closer at the results according to size of the business. Is the assumption right that the larger the enterprise, the more important it is to control? Our results respond this question with a yes. As can be seen in Fig. 2, the larger the enterprise, the more significant is the share of replies "very important." With each higher category, the importance of controlling increases.

Especially interesting is the category of large enterprises (with more than 250 employees), where the share of answers "very important" and "important" reached exact 90% and no respondent answered the question with "little important" or "absolutely unimportant."

The result that controlling is more important in small businesses than in medium-sized enterprises may be caused by their lower representation in the sample (56 versus 90).

These results could lead us to the conclusion that the higher the level of management, the more controlling in an enterprise must be perceived important. In our case, however, it does not apply (Fig. 3). The reason is not the respondents' statements, but the composition of the individual groups of the research sample. As we look at all enterprise sizes, classifying respondents into management levels is not easy. Executives of micro-enterprises must be included in the top-management group, which causes a certain distortion of the results, as many of them have no subordinates and therefore perceive controlling as little important.

If we omit all micro-entrepreneurs (up to nine employees) the results seriously change. In this new category (top management in companies with more than ten employees; $n = 50$) the response "very important" has a share of 54% and "important" 32%.

Another interesting comparison is the importance of controlling in the business and its economic outcomes. Does a stronger controlling have impact on whether a business is profitable or has a loss? According to the results of our survey, yes.
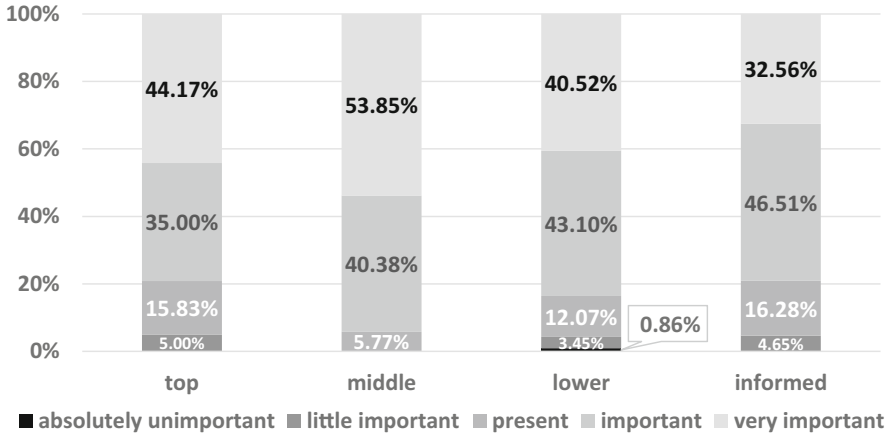
Fig. 3 Importance of controlling in companies (respondents' management level). Source: own work
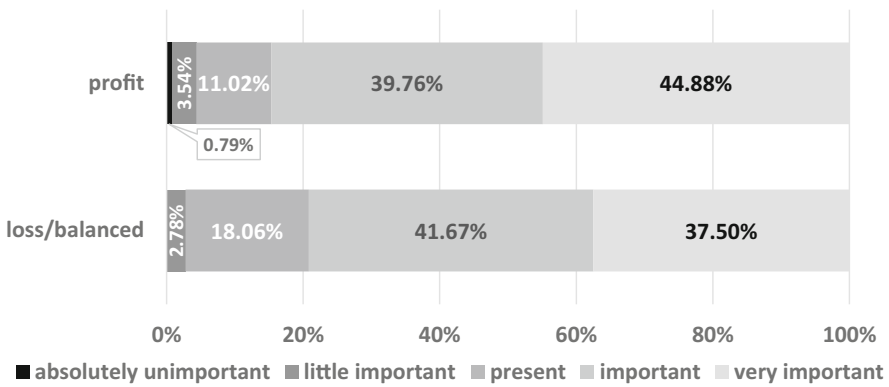
Fig. 4 Importance of controlling in companies (profit and loss/balanced result). Source: own work

Profitable companies state that controlling is "very important" in more than 45% of them and "important" in almost 40% (Fig. 4).

Among the most represented subjects of business activity according to SK-NACE-classification, we see the highest importance of controlling in industrial producers, with more than 90% responses higher than "important" (Fig. 5). The category wholesale and retail trade and repair of motor vehicles and motorcycles has the largest share of "important" responses. The category "Professional scientific and technical services" is particularly interesting because it also includes accounting firms.

Lastly, we compare the results of the importance of control with the attitude of the respondent in the role of object of control. From Fig. 6, it is clear that respondents
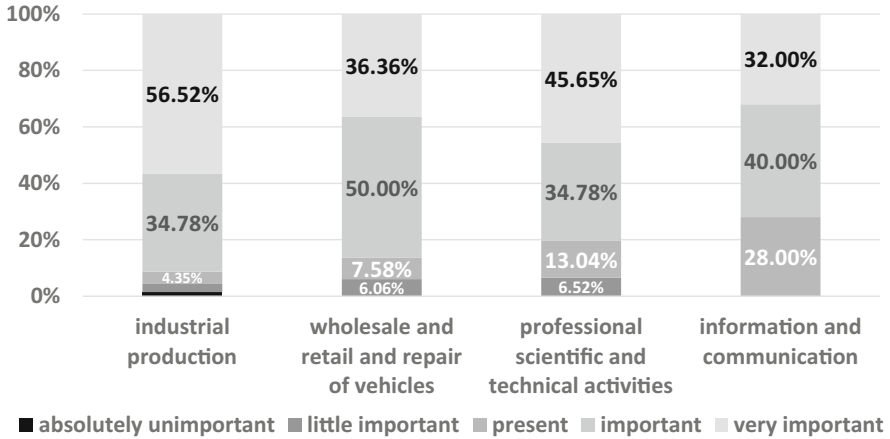
Fig. 5 Importance of controlling in companies (subjects of business activity). Source: own work
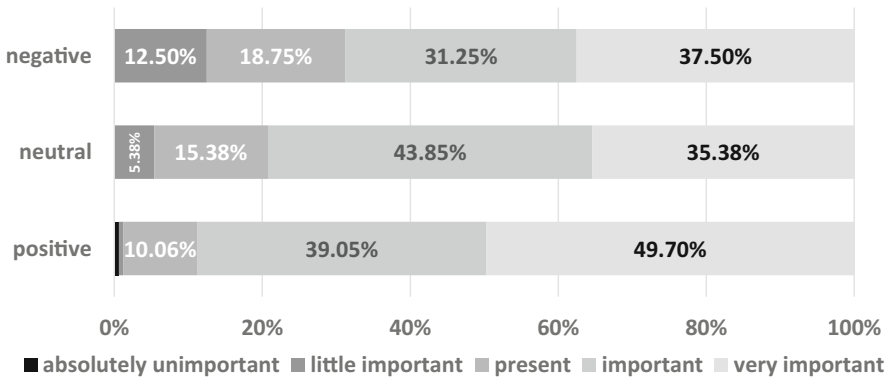
Fig. 6 Importance of controlling in companies (attitude as an object of control). Source: own work

who have positive attitudes to controlling also consider it "very important" (almost half) or "important" (more than 39%) in their companies.

5 Conclusion

Controlling as a separate management function has more than a very long history. While in Western countries the own responsibility of employees came to the forefront during the development, in the Eastern countries, due to another political regime, attention has still focused on formal control. While the Western approach expects man's motivation to achieve the best performance, many people in the Eastern countries require the certainty of supervision to ensure that they do not

make a mistake. However, it is very important not to take the Eastern approach as something obsolete, overwhelmed, and very wrong.

Our results show that the overwhelming majority of respondents from companies operating in the Slovak republic consider controlling important or very important. The results also show that the larger the enterprise, the higher the importance of the management control function. In addition, the higher the manager is situated in company's organizational structure (hierarchy), the more important controlling is considered. An exception to this rule is micro-entrepreneurs.

While small businesses (micro-enterprises and small businesses) are able to exercise a large degree of direct control, with the increasing size of the business, this possibility is lost. Instead of directly supervising employees, managers of larger businesses must rely heavily on different reports or statistics. Direct supervision gives the impression of lesser control. In fact, this should not reduce the importance, because control is still practiced, only in another way. When something can cause such a reduction of importance, it is trust in subordinates, their high self-discipline, and responsible self-control. Automated control is another option as it makes manager's work easier and, as time goes on, employees perceive it as a regular part of their work.

Interestingly, many respondents believe that controlling may be very important only if there is a separate job position of the controller. The concept of the controller has expanded strongly lately. His role is to provide information based on financial and managerial accounting, which can help managers to decide better. Unfortunately, such opinions may result to a so-called professional understanding of controlling. This, in turn, causes that managers inadequately exercise their control functions, as they may assume that another body has to control. In addition, controllers process very well quantitative data. Due to the nature of their work, they mostly do not receive qualitative data at all. A missing combination of these two kinds of data may result in an incorrect manager's decision.

We evaluate the results for the category "Professional scientific and technical activities" a little bit surprisingly, since this category also includes accounting firms. There has to be a very high accuracy of operations. The share of "little important" and "present" responses is therefore suspicious for us. The weaker results in the "Information and communication" category of businesses may be due the strong representation of automatic control. While it is responsible for a number of control activities, managers can engage in other activities. Over time, such controls become invisible as they correct deviations independently without the need for a manager to intervene. It becomes visible again only for very serious deviations, such as virus occurrence, or hacking of system.

We see further research opportunities in the area of micro-enterprises, as external control in Slovakia is increasing. It can force entrepreneurs to change their minds for internal control. Another important area of controlling is automation, digitization, and artificial intelligence. The next upsurge in the importance of control can be caused by a possible financial or economic crisis.

References

Agarwal, R. D. (1982). *Organization and management*. New Delhi: Tata McGraw-Hill Education.

Bagad, V. S. (2009). *Principles of management* (3rd revised ed.). Pune: Technical Publications.

Benowitz, E. (2001). *Principles of management*. New York: Hungry Minds.

Boddy, D. (2008). *Management: An introduction* (4th ed.). Harlow: Pearson Education.

Carenys, J. (2010). Management control systems: A historical perspective. *International Bulletin of Business Administration, 7*(1), 37–54.

Carroll, S. J., & Gillen, D. I. (1987). Are the classical management functions useful in describing managerial work? *Academy of Management Review, 12*(1), 38–51.

Department of Electrical Engineering, University of Notre Dame. (2014). Control & control history. *Transactions on automatic control*. Accessed April 12, 2017, from http://ieeecss.org/publications/tac/control-control-history

Dubrin, A. J. (2012). *Essentials of management* (Ninth ed.). Mason: South-Western.

Eilon, S. (1971). *Management control. Studies in management*. London: Macmillan Education.

Emmanuel, C., Otley, D., & Merchant, K. (1990). *Accounting for management control* (2nd ed.). London: Springer.

Flamholtz, E. G. (1996). *Effective management control: Theory and practice*. London: Kuwer Academic.

Giglioni, G. B., & Bedeian, A. G. (1974). A conspectus of management control theory: 1900–1972. *Academy of Management Journal, 17*(2), 292–305.

Hitt, M. A., Black, J. S., & Porter, L. W. (2012). *Management* (3rd ed.). Upper Saddle River: Prentice Hall.

Kaufmann, P. J., Welsh, D. H. B., & Bushmarin, N. (1995). Locus of control and entrepreneurship in the Russian Republic. *Entrepreneurship Theory and Practice, 20*(1), 43–56.

Kracmar, J., Majtan, M., Jurovych, M., Misun, J., Misunová Hudakova, I., Oravsky, P., & Zalezakova, E. (2013). *Kontrolovanie [Controlling]*. Bratislava: KARTPRINT.

Lewis, F. L. (1992). *Applied optimal control and estimation. Digital design and implementation*. Englewood Cliffs: Prentice Hall.

McKenna, S., Garcia-Lorenzo, L., & Bridgman, T. (2010). Managing, managerial control and managerial identity in the post-bureaucratic world. *Journal of Management Development, 29*(2), 128–136.

Medina, R. (2006). *Business organization and management*. Rex Bookstore: Manilla.

Mintzberg, H. (1973). *The nature of managerial work*. New York: Harper & Row.

Mintzberg, H. (1975). The Manager's Job: Folklore and fact. *Harvard Business Review, 53*(4), 49–61.

Misun, J. (2017). Changes in management function of control. In: *International conference socioeconomic perspectives in the age of XXI century globalization* (pp. 204–217). Tirana: University of Tirana, Faculty of Economy, Department of Economics.

Pološki Vokić, N. (2012). Controlling of human resource management. Practices in Croatian firms. *Eurasian Business Review, 2*(1), 93–117.

Rudani, R. B. (2013). *Principles of management*. New Delhi: Tata McGraw-Hill Education.

Sitkin, S. B., Cardinal, L. B., & Bijlsma-Frankema, K. M. (2010). *Organizational control*. Cambridge: Cambridge University Press.

Tsoukas, H. (1994). What is management? An outline of a metatheory. *British Journal of Management, 5*(4), 289–301.

Wang, F. Y., & Liu, D. (2008). *Networked control systems: Theory and applications*. London: Springer.

Whitley, R. (1987). Taking firms seriously as economic actors: Towards a sociology of firm behaviour. *Organization Studies, 8*(2), 125–147.

Whitley, R. (1989). On the nature of managerial tasks and skills: Their distinguishing characteristics and organisation. *Journal of Management Studies, 26*(3), 209–224.

Zhang, X. (2014). *Enterprise management control systems in China*. Dalian: Springer.

Selecting an Effective Leader: A Competency-Based Grey Relational Analysis Model

Zagross Hadadian, Mona Saedi, and Zahra Arabkorlu

Abstract The accurate and targeted process of selecting the most appropriate human resources can be a key factor in organizational success. The increasing attention to the leadership factor in making organizational developments across the world and the key role of effective leader show the need to use effective methods to recruit effective leaders. In this chapter, based on the proposed model with the help of analytical hierarchy process (AHP), the main criteria on the leadership effectiveness in the organization are weighted. Then, each candidate is scored based on the mentioned criteria with the grey relational analysis (GRA). In this method, candidates with higher scores are introduced as the model selection. Since the grey relational theory follows some assumptions and principles such as nonuniqueness of solution and availability of minimum information, it can be used to greyly select leaders and make decisions on leaders when there is uncertainty and incomplete information.

Keywords Effective leaders · Analytical hierarchy process · Grey relational analysis

1 Introduction

There has been long-standing debate on the effectiveness, efficiency, productivity, and excellence of organizations among organizational theorists, management philosophers, financial and economic analysts, and executives. The scientists, theorists,

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and experts investigating the organization have generally started their works with the issue of effectiveness. The effectiveness efforts are a common aspect of all organizations, and effectiveness is a concept that has received special attention in the new management so that the majority of research in the field of organization and management has addressed it consciously or unconsciously, directly and indirectly.

Scholars believe that effective leadership is a determining factor while examining the success or failure of organization (Bennis and Nanus 2007). They believe effective leaders have a crucial role in organizational outcome (Denison et al. 1995). In addition, Yukl (2008) argued that identifying leadership characteristics is important to improve leader effectiveness and organizational performance.

Going through the literature review, we find models of a competency-based framework to select an effective leader (e.g., Leithwood and Riehl (2003)). These models require the identification of leadership skills that are aligned with superior performance (Hollenbeck et al. 2006). Bryman (2007) attains that if leaders have and follow these aspects of leadership their effectiveness would enhance. The issue is "Why do we choose so many flawed leaders?" The problem is that persons who seem leader like may not have the skills required to be an effective leader (Hogan et al. 1994). So, how can we guarantee that effective leaders enter organizations?

The purpose of this chapter is to provide a model through which organizations can recruit or select more effective leaders. Based on this model organizations can assess all available candidates based on special criteria which are necessary for effective leaders. This model offers an opportunity to select leaders that are more effective. This would consequently increase the effectiveness of teams and organization.

2 Literature Review

One of the most important issues related to organizational effectiveness is leadership effectiveness. Herbst (2003) argue that one clear point that flows in the whole leadership literature is that successful organizations have a major feature that distinguishes them from unsuccessful ones, which is dynamic and effective leadership. Further research by Drucker et al. (2015) points out that leaders and managers are the most scarce, basic resources of all organization. For this reason, organizations are continually looking for effective leaders (Cunningham 2003). Further research by Parolini (2004) on the competitiveness values empirically shows that effective leaders first value people, and then context and systems, and finally production goals. These priorities are empirically related to maximizing the commercial and financial performance as well as organizational effectiveness. Therefore, we can say that leadership effectiveness will lead to organizational effectiveness.

Further research by Stevenson and Warn (2004) attains that effective leadership is a person's ability to influence others effectively when the leader uses a combination of his knowledge, skills, and attitude. Effective leadership in the organization is the essential factor in creating sympathy and empathy. Effective leaders are those who

can bring together different people under a single intellectual structure and view and create the perception that individual differences are trivial (Haseen 2001). Moreover, Stogdill (1974) affirms that unlike ineffective leaders, effective leaders inform their subordinates on what is expected of them, let them know the process of changes, explain the reasons for decisions, and ask their opinions before adopting a new plan. The most effective leaders show higher adaptation degrees, which enables them to adapt their behavior with ever-changing and contradictory demands.

The implications of management theories that emphasize efficiency and effectiveness and focus on traditional leadership methods are that to achieve efficiency and effectiveness. It is necessary to apply traditional leadership methods, such as the traits theory, behavioral theories, contingency and conditional theories, and even the transformational leadership theory, because these leadership methods are consistent with these management approaches and will lead to efficiency and effectiveness (Haseen 2001). Although over the last decades, studies have been done on behaviors related to leadership effectiveness, they have mostly examined broad categories of task-oriented and relationship-oriented behaviors (such as structure development and attention to employees) that cannot be easily related to the requirements and challenges that managers are faced with in different situations (Farahi 1996).

Since hiring, training, and firing poor and inappropriate staff are often costly, and realizing the inappropriateness of some employees is time consuming (Golec and Kahya 2007), the correct selection of candidates for the organization is vital. One of the basic steps of staff selection process and one of the most important and complex issues in employee selection is to present the features and indicators required for a candidate and how to weight them (Jessop 2004; Lin 2010). Many researchers do staff selection using different techniques and indicators. The literature review shows that the indicators used as staff selection criteria are very broad and often different. However, there are some common indicators in the studies (Golec and Kahya 2007; Kelemenis and Askounis 2010; Dursun and Karsak 2010); but when it comes to select a leader, the selection parameters will be different.

Researchers define and explain leadership in various ways. According to Bass (1985), there are as many definitions of leadership as there are people who want to define it. This diversity in definition can be clarified by Conger (1992) indicating that leadership is largely an intuitive concept for which there can never be a single agreed-upon definition. Just as there are different definitions for leadership, there are different leadership theories. To start with, the leader traits theory, which was among the first leadership theories, describe leadership effectiveness by the natural characteristics and abilities (such as superior intelligence, good memory, and bountiful energy) of the leader (Steers et al. 1996). However, this theory had some weaknesses; therefore, new theories were proposed. For instance, leader behavior theories which explain leadership effectiveness by leader behaviors. These theories, instead of leaders' traits, concentrate on behaviors of leaders to understand leadership effectiveness (Steers et al. 1996). Scholars (for example, Schellhardt 1996; Smith et al. 1996) attain that measuring leadership effectiveness in meaningful and useful way is a difficult exercise, and mostly leads to failure. Researchers try to determine factors which should be assessed (for example, Hughes et al. 1993).

Moreover, many organizations apply competence model. These models introduce behaviors that are translated into skills and behaviors that a leader must excel in (Guinn 1996). The major benefit of the competence model is that it keeps alignment between needed behaviors and skills of effective leaders and what is assessed (Hughes et al. 1993).

There are so many competence items which can be assessed to select an effective leadership. For instance, they should be a good listener, have ability to solve conflicts, have knowledge of the law, and be able to establish directions for others (Spencer and Spencer 1993; Conger 1992; Kotter 1990). Moreover, they should be strategic opportunist, a good data analyst, sensitive to diversified issues, and have good communication skills (Morrison 1992).

Additionally, in their researches, Oyinlade et al. (2003) counted a number of essential behavioral leadership qualities as follows: good listening skills, good presentation skills, participative decision-making style, motivator, honest and ethical, organizational knowledge, good interpersonal skills, fiscal efficiency, knowledge of policies, vision for the future, delegating authority, providing support, fairness, creativity, hardworking, good prioritizing skills, problem-solving skills.

3 The Proposed Method and Experimental Result

Since the most fundamental feature of human resources is their fuzziness, some researchers (for example, Capaldo and Zollo 2001; Dursun and Karsak 2010; Golec and Kahya 2007; Gungor et al. 2009; Zhang and Liu 2011) have chosen multicriteria decision-making methods in fuzzy environments for employee selection. Since these efforts are combined with the fuzzy system, they are complex and the capacity as well as the possibility of the actual use of these methods in human resources unit is considerably low. Moreover, Grey Relational Analysis (GRA) has not been used in the selection of leaders yet. To reduce complexity, only two methods were used in this study; the Analytic Hierarchy Process (AHP) to determine the weight of the criteria for selecting key employees and the grey numerical system to grade the employees. One of the approaches for decision-making is using AHP which is a simple decision-making tool to solve complex, unstructured, and multicriteria issues (Gungor et al. 2009). Using AHP, one can weight indicators of effective leaders and consequently grade each employee based on GRA. Twenty percent of individuals with higher scores (Branham 2005) will be determined as the best effective leaders. GRA was conducted through formulation in Excel software. The steps are illustrated along with an example as follows.

4   Weighting the Indicators for Effective Leaders by AHP

Decision-making group is an approach proposed by numerous researchers (Canós and Liern 2008; Chen 2000; Chien and Chen 2008) to select the employees based on integrated group members' opinions. Since the selection of an employee is a multi-criteria decision-making issue, there is a need to use multi-criteria decision-making approaches. One of the most common approaches in this respect is AHP that focuses on obtaining the relative weights of the criteria and the total values of each option based on these weights (Torfi et al. 2010).

To determine the weights of each indicator for effective leader, AHP is used. In this example, the weights of the criteria for effective leader have been determined by organizational experts based on the organization strategies and competence items provided in the literature review. They selected the most important criteria of effective leaders as depicted in Fig. 1.

After the implementation of AHP, the weights of the criteria are shown in Table 1.

5   Formation of Decision-Making Matrix

To prioritize the leaders based on the criteria under study, first the data related to the criteria for effective leader were collected. These data are provided as the main decision-making matrix (Table 2).
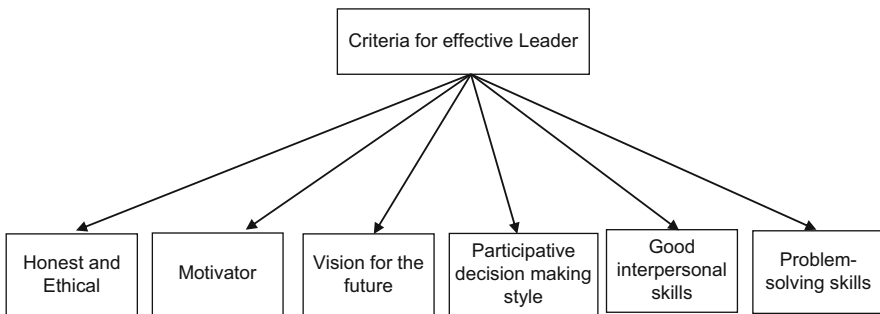
Fig. 1 Criteria for effective leader. Source: Developed by the authors

Table 1 The weights of the criteria

	Honest and Ethical	Motivator	Vision for the future	Participative decision-making style	Good interpersonal skills	Problem-solving skills
W (AHP)	0.28	0.132	0.128	0.078	0.062	0.32

Source: Developed by the authors

Table 2 Decision-making matrix

Leaders	Honest and ethical	Motivator	Vision for the future	Participative decision-making style	Good interpersonal skills	Problem-solving skills
A1	0.800	0.900	0.700	0.800	0.800	0.800
A2	1.000	0.900	0.900	0.800	0.700	0.500
A3	0.600	0.800	0.800	0.900	0.900	1.000
A4	0.700	0.900	0.900	0.800	0.800	0.700
A5	0.900	0.800	1.000	0.700	0.800	0.900

Source: Authors' own calculations

Table 3 Max, min, max–min, and star values

	Honest and ethical	Motivator	Vision for the future	Participative decision-making style	Good interpersonal skills	Problem-solving skills
Max	1.000	0.900	1.000	0.900	0.900	1.000
Min	0.600	0.800	0.700	0.700	0.700	0.500
Max–min	0.400	0.100	0.300	0.200	0.200	0.500
Star	0.400	0.200	0.300	0.300	0.300	0.500

Source: Authors' own calculations

6   Normalization of Decision-Making Matrix

Owing to the fact that criteria lack uniformity in the form and nature, following the formation of decision-making matrix, normalization has to be done. To set the final priorities of the leaders based on the calculated criteria and weights, the following equations are used (Kuo et al. 2008; Li et al. 2007; Tzeng and Huang 2011):

$$\text{The larger the criterion, the better } x_{ij} = \frac{y_{ij} - \min\left(y_{ij}\right)}{\max\left(y_{ij}\right) - \min\left(y_{ij}\right)} \qquad (1)$$

$$\text{The smaller the criterion, the better } x_{ij} = \frac{\max\left(y_{ij}\right) - y_{ij}}{\max\left(y_{ij}\right) - \min\left(y_{ij}\right)} \qquad (2)$$

The closer the criterion to the desired value $(y*)$, the better

$$x_{ij} = \frac{\mid y_{ij} - y^* \mid}{\max\left\{\max\left(y_{ij}\right) - y^*; \ y^* - \min\left(y_{ij}\right)\right\}} \qquad (3)$$

Here, for all the criteria, the closer the criterion to 1, the better. For example, the closer the proportion of "Motivator" to 1, the better; therefore, the desirable value $(y*)$ is one. The denominator is also calculated and presented in Table 3.

Table 4 Normalized values for the indicators of effective leaders

Leaders	Honest and ethical	Motivator	Vision for the future	Participative decision-making style	Good interpersonal skills	Problem-solving skills
A1	0.500	0.500	1.000	0.667	0.667	0.400
A2	0.000	0.500	0.333	0.667	1.000	1.000
A3	1.000	1.000	0.667	0.333	0.333	0.000
A4	0.750	0.500	0.333	0.667	0.667	0.600
A5	0.250	1.000	0.000	1.000	0.667	0.200

Source: Authors' own calculations

$$\max\left(y_{ij}\right) = 0.9$$

$$\min\left(y_{ij}\right) = 0.8$$

$$\max\left(0.9 - 1; 1 - 0.8\right) = 0.2$$

So, we have:

$$x_{11} = \frac{\mid 0.9 - 1 \mid}{0.2} = 0.5$$

$$x_{21} = \frac{\mid 0.9 - 1 \mid}{0.2} = 0.5$$

$$x_{31} = \frac{\mid 0.8 - 1 \mid}{0.2} = 1$$

$$x_{41} = \frac{\mid 0.9 - 1 \mid}{0.2} = 0.5$$

$$x_{51} = \frac{\mid 0.8 - 1 \mid}{0.2} = 1$$

Other measurements are calculated in the same way. Based on the available relations, the relevant data to the leaders have been normalized. The results of the normalization of the decision-making matrix are provided in Table 4.

7 Reference Sequence Definition

A reference sequence which is in fact the given ideal option is defined to provide a basis for evaluating and comparing the sequence corresponding to each of the options (Golmohammadi and Mellat-Parast 2012). The closer the x_{ij} is to 1, the more desirable it is. Therefore, reference sequence is a series whose all functional values are closer to 1 and is defined as follows:

Table 5 Reference sequence for the indicators of effective leaders

Leaders	Honest and ethical	Motivator	Vision for the future	Participative decision-making style	Good interpersonal skills	Problem-solving skills
A1	0.500	0.500	0.000	0.333	0.333	0.600
A2	1.000	0.500	0.667	0.333	0.000	0.000
A3	0.000	0.000	0.333	0.667	0.667	1.000
A4	0.250	0.500	0.667	0.333	0.333	0.400
A5	0.750	0.000	1.000	0.000	0.333	0.800

Source: Authors' own calculations

$$X_0 = \left(x_{01}, x_{02}, \ldots x_{0j}, \ldots, x_{0n}\right) = (1, 1, \ldots, 1, \ldots 1) \tag{4}$$

The more the comparative sequence of option i is closer to the reference, in this case, the more desirable it will be. Accordingly, the difference between each of the elements contained in the decision-making matrix needs to be normalized with reference sequence. It is enough to subtract 1 from the elements in Table 4 individually. The results of the difference calculation along with the reference sequence are presented in Table 5.

8   Calculation of Grey Relational Coefficient

The closeness of each x_{ij} to the corresponding x_{0j} is measured using Grey Relational Coefficient. The larger the Grey Relational Coefficient, the closer it is. Grey Relational Coefficient is calculated as follows (Kuo et al. 2008)

$$\gamma\left(x_{0j}; x_{ij}\right) = \frac{\Delta\text{Min} + \zeta\Delta\text{Max}}{\Delta_{ij} + \zeta\Delta\text{Max}} \quad i = 1; 2; \ldots; m \quad j = 1; 2; \ldots; n \tag{5}$$

In the above equation, ζ is the separation coefficient which is usually considered 0.5 (Chang and Lin 1999; Lin et al. 2007).

To perform the above equations, the Δ_{ij} should be calculated.

$$\Delta_{ij} = x_{0j} - x_{ij} \tag{6}$$

So, Δmin is the smallest value of Δ_{ij} and Δmax is the largest value of Δ_{ij}.

For example, "Motivator" is calculated based on the existing correlation in Grey Relational Coefficient as follows (Table 6):

Table 6 Δmin, Δmax, rΔmax and Δmin+rΔmax values

	Honest and ethical	Motivator	Vision for the future	Participative decision-making style	Good interpersonal skills	Problem-solving skills
Δmin	0.000	0.000	0.000	0.000	0.000	0.000
Δmax	1.000	0.500	1.000	0.667	0.667	1.000
rΔmax	0.500	0.250	0.500	0.333	0.333	0.500
Δmin +rΔmax	0.500	0.250	0.500	0.333	0.333	0.500

Source: Authors' own calculations

Table 7 The effect of Grey Relational Coefficient

Leaders	Honest and ethical	Motivator	Vision for the future	Participative decision-making style	Good interpersonal skills	Problem-solving skills
A1	0.500	0.333	1.000	0.500	0.500	0.455
A2	0.333	0.333	0.429	0.500	1.000	1.000
A3	1.000	1.000	0.600	0.333	0.333	0.333
A4	0.667	0.333	0.429	0.500	0.500	0.556
A5	0.400	1.000	0.333	1.000	0.500	0.385

Source: Authors' own calculations

$$\gamma(x_{01}; x_{11}) = \frac{0 + (0.5 * 0.5)}{0.5 + (0.5 * 0.5)} = 0.333$$

$$\gamma(x_{01}; x_{21}) = \frac{0 + (0.5 * 0.5)}{0.5 + (0.5 * 0.5)} = 0.333$$

$$\gamma(x_{01}; x_{31}) = \frac{0 + (0.5 * 0.5)}{0 + (0.5 * 0.5)} = 1$$

$$\gamma(x_{01}; x_{41}) = \frac{0 + (0.5 * 0.5)}{0.5 + (0.5 * 0.5)} = 0.333$$

$$\gamma(x_{01}; x_{51}) = \frac{0 + (0.5 * 0.5)}{0 + (0.5 * 0.5)} = 1$$

The results are presented in Table 7.

9 Calculation of Grey Relational Grade

After calculating all the coefficients of grey relation $\gamma\ (x_{0j}, x_{ij})$, grey relational grade is calculated though the following formula:

Table 8 Effective leaders' grey relation

Leaders	Honest and ethical	Motivator	Vision for the future	Participative decision-making style	Good interpersonal skills	Problem-solving skills
A1	0.140	0.044	0.128	0.039	0.031	0.145
A2	0.093	0.044	0.055	0.039	0.062	0.320
A3	0.280	0.132	0.077	0.026	0.021	0.107
A4	0.187	0.044	0.055	0.039	0.031	0.178
A5	0.112	0.132	0.043	0.078	0.031	0.123

Source: Authors' own calculations

Table 9 Summary of grading the leaders

Leaders	Score	Rank
A3	0.642	1
A2	0.613	2
A4	0.533	3
A1	0.527	4
A5	0.519	5

Source: Authors' own calculations

$$\Gamma(x_0; x_i) = \sum_{j}^{n} w_f \gamma(x_{0j}; x_{ij}) \tag{7}$$

In fact, grey relational grade shows the similarity between each of the options with reference (ideal) options (Fung 2003). Obviously, the higher the grey relational grades calculated for option i, the more desirable.

In these calculations by using AHP, weights of indicators have been calculated. The weight of each index is multiplied by relevant elements individually. For example, the weight of "Motivator" index is 0.132. This number needs to be multiplied by all the elements of the sub-column for the index of "Motivator." Based on the existing relations and the final weights of the decision-making index, the weighted grade of each leader is provided in Table 7.

According to the results set forth in Table 8, the final grade is calculated for each leader. The summary of grading the leader is presented in Table 9.

According to the calculations, Leader A3 is the most effective leader and leader A2 is the second most effective leader.

10 Conclusion

Effective leaders have crucial rule in outcomes of organizations. Changes in the world and intense competition between organizations have made the use of effective leadership vital more than ever. Thus, organizations attract and appoint effective leaders in order to make organizational development and gain competitive power. In

this regard, organizations are trying to attract, select, and retain effective leaders. Hence, the importance of methods to recruit effective leaders becomes more apparent.

Effective leaders have specific attributes, behaviors, and style of leadership. As leadership characteristics are important to improve leader effectiveness and organizational performance, scholars concentrate on identifying leadership characteristics. Moreover, these characteristics can be used as criteria for selection of leaders. There are studies that concentrated on the characteristics and competencies of effective leaders. These studied provide some fundamental characteristics for effective leaders that can be used in selection of leaders.

In this chapter, based on literature review, some main criteria for effective leader are selected. With the use of AHP, these main criteria are weighted. Then, each candidate is scored based on the mentioned criteria with the GRA. Candidates with higher scores are introduced as the model selection.

As discussed, those who seem leader like may not have the skills required to be an effective leader. So, some techniques and models should be provided to organizations to select effective leaders. The current chapter discussed what leader effectiveness is and proposed a model to select effective leaders.

References

Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York: Free Press.

Bennis, W. G., & Nanus, B. (2007). *Leaders: Strategies for taking charge (Collins business essentials)*. New York: Harper Business Essentials.

Branham, L. (2005). Planning to become an employer of choice. *Journal of Organizational Excellence, 24*(3), 57–68.

Bryman, A. (2007). Effective leadership in higher education: A literature review. *Journal of Studies in Higher Education, 32*(6), 693–710.

Canós, L., & Liern, V. (2008). Soft computing-based aggregation methods for human resource management. *European Journal of Operational Research, 189*(3), 669–681.

Capaldo, G., & Zollo, G. (2001). Applying fuzzy logic to personnel assessment: A case study. *Omega, 29*(6), 585–597.

Chang, T., & Lin, S. J. (1999). Grey relation analysis of carbon dioxide emissions from industrial production and energy uses in Taiwan. *Journal of Environmental Management, 56*(4), 247–257.

Chen, C.-T. (2000). Extensions of the TOPSIS for group decision-making under fuzzy environment. *Fuzzy Sets and Systems, 114*(1), 1–9.

Chien, C.-F., & Chen, L.-F. (2008). Data mining to improve personnel selection and enhance human capital: A case study in high-technology industry. *Expert Systems with Applications, 34*(1), 280–290.

Conger, J. (1992). *Learning to lead*. San Francisco: Jossey-Bass.

Cunningham, A. D. (2003). *Leadership development in catholic: A study on several leadership*. Doctoral dissertation, SAINT LOUIS University.

Denison, D. R., Hooijberg, R., & Quinn, R. E. (1995). Paradox and performance: Toward a theory of behavioral complexity in managerial leadership. *Journal of Organizatoion Science, 6*(5), 524–540.

Drucker, P. F., Hesselbein, F., & Kuhl, J. S. (2015). *Peter Drucker's five most important questions: Enduring wisdom for today's leaders*. Wiley.

Dursun, M., & Karsak, E. E. (2010). A fuzzy MCDM approach for personnel selection. *Expert Systems with Applications, 37*(6), 4324–4330.

Farahi, B. (1996). The relationship between effectiveness and managerial advance. *Masbah Journal*. Fifth year. Tehran, 19.

Fung, C.-P. (2003). Manufacturing process optimization for wear property of fiber-reinforced polybutylene terephthalate composites with grey relational analysis. *Wear, 254*(3), 298–306.

Golec, A., & Kahya, E. (2007). A fuzzy model for competency-based employee evaluation and selection. *Computers & Industrial Engineering, 52*(1), 143–161.

Golmohammadi, D., & Mellat-Parast, M. (2012). Developing a grey-based decision-making model for supplier selection. *International Journal of Production Economics, 137*(2), 191–200.

Guinn, K. A. (1996). Assessment techniques for top executives. *Career Development International, 1*(3), 9–14.

Gungor, Z., Gurkan, S., & Erhan Kesen, S. (2009). A fuzzy AHP approach to personnel selection problem. *Applied Soft Computing, 9*, 641–646.

Haseen, T. (2001). *Manual for leadership effectiveness scale*. Agra: Rakhi Prakashan Company.

Herbst, J. D. (2003). *Organizational servant leadership and its relationship to secondary school effectiveness*. Doctoral dissertation, Florida Atlantic.

Hogan, R., Curphy, G. J., & Hogan, J. (1994). What we know about leadership: Effectiveness and personality. *American Psychologist, 49*(6), 493.

Hollenbeck, G. P., McCall, M. W., Jr., & Silzer, R. F. (2006). Leadership competency models. *The Leadership Quarterly, 17*(4), 398–413.

Hughes, R., Ginnett, R., & Curphy, G. (1993). *Leadership: Enhancing the lessons of experience*. Boston: Richard D. Irwin.

Jessop, A. (2004). Minimally biased weight determination in personnel selection. *European Journal of Operational Research, 153*(2), 433–444.

Kelemenis, A., & Askounis, D. (2010). A new TOPSIS-based multi-criteria approach to personnel selection. *Expert systems with applications, 37*(7), 4999–5008.

Kotter, J. (1990). *A force for change: How leadership differs from management*. New York: Free Press.

Kuo, Y., Yang, T., & Huang, G.-W. (2008). The use of grey relational analysis in solving multiple attribute decision-making problems. *Computers & Industrial Engineering, 55*(1), 80–93.

Leithwood, K., & Riehl, C. (2003). *What we know about successful school leadership*. Nottingham: National College for School Leadership.

Li, G.-D., Yamaguchi, D., & Nagai, M. (2007). A grey-based decision-making approach to the supplier selection problem. *Mathematical and Computer Modelling, 46*(3), 573–581.

Lin, H. T. (2010). Personnel selection using analytic network process and fuzzy data envelopment analysis approaches. *Computers & Industrial Engineering, 59*(4), 937–944.

Lin, S. J., Lu, I., & Lewis, C. (2007). Grey relation performance correlations among economics, energy use and carbon dioxide emission in Taiwan. *Energy Policy, 35*(3), 1948–1955.

Morrison, A. M. (1992). *The new leaders: Guidelines on leadership diversity in America*. Jossey-Bass Management Series: ERIC.

Nanus, B. (1985). *Leaders: The strategies for taking charge*. New York: Harper & Row.

Oyinlade, A. O., Gellhaus, M., & Darboe, K. (2003). Essential behavioral qualities for effective leadership in schools for students who are visually impaired: A national study. *Leadership*.

Parolini, J. L. (2004). *Effective servant leadership: A model incorporating servant leadership and the competing values framework*. Paper presented at the Proceedings of the Servant Leadership Research Roundtable.

Schellhardt, T. D. (1996). Annual agony: It's time to evaluate your work, and all involved are groaning. *The Wall Street Journal*, A1.

Smith, B. N., Hornsby, J. S., & Shirmeyer, R. (1996). Current trends in performance appraisal: An examination of managerial practice. *SAM Advanced Management Journal, 61*(3), 10–16.

Spencer, L., & Spencer, S. (1993). *Competence at work*. New York: Wiley.

Steers, R. M., Porter, L., & Bigley, G. (1996). *Motivation and leadership at work* (6th ed.). New York: McGraw-Hill.

Stevenson, E., & Warn, R. (2004). Australian government. *Development Defense*, 3.

Stogdill, M. R. (1974). *Handbook of leadership: A survey of theory and research*. New York: The Free Press.

Torfi, F., Farahani, R. Z., & Rezapour, S. (2010). Fuzzy AHP to determine the relative weights of evaluation criteria and Fuzzy TOPSIS to rank the alternatives. *Applied Soft Computing, 10*(2), 520–528.

Tzeng, G.-H., & Huang, J.-J. 2011. *Multiple attribute decision making: Methods and applications*. CRC Press.

Yukl, G. J. (2008). How leaders influence organizational effectiveness. *The Leadership Quarterly, 19*(6), 708–722.

Zhang, S.-f., & Liu, S.-y. (2011). A GRA-based intuitionistic fuzzy multi-criteria group decision making method for personnel selection. *Expert Systems with Applications, 38*(9), 11401–11405.

Progressive Services Viewed by Service Providers: Regional Comparative Analysis

Elżbieta Skąpska and Marcin Hundert

Abstract The chapter concerns progressive services that are provided by Polish entrepreneurs from two provinces that are from different ends of Poland: Podlaskie and Westpomeranian. The aim of the chapter is to present the survey research results that were performed via the Internet. The research was complemented with the Mann–Whitney U test which enabled the verification as for which questions differentiate both provinces. The comparative method allowed the research to define prospects of developing the service offer which constitutes a postulate for transforming service enterprises. The local service trades that feature progressive services and flexible attitude toward their clients have been identified. Similarly, the various factors were recorded and they prove that different courses of action were taken by service company managers from the two provinces. The most important areas of dissonance concern the following issues: market identification by means of marketing research, adaptive abilities with regard to needs of prospect service receivers, contractual terms with the local governments, equipping companies with means of labor and tools, rational employment and the level of human traffic at the place of service provision.

Keywords Progressive services · Regional analysis · Service provider evaluation

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1 Introduction

The growth of contemporary economy is tightly connected with innovations which drive development and wealth. They increase competitiveness. Introducing new products in a service sector concerns the indication of a trajectory for various groups that act in accordance with their technological side (Evangelista 2000). Adapting business activity, for instance, in the information technology (IT) branch, and its influence on innovations are included in the Barras' product life cycle. In the initial phase, there are process innovations that aim at increasing the efficiency of service provision. The next phase includes the introduction of innovations in order to improve quality. The cycle ends with the implementation phase of product innovations (Barras 1986). As for the flow of goods, services, and labor force there are still many unused possibilities to change and expand business activity. One of the solutions that can contribute to the enhancement of conditions for enterprise functioning, as well as the economic growth, is providing a unitary market (Skąpska 2014). It is particularly significant as its goal is to meet standards approved by a demanding client.

In services, unlike in material-good business, there is a high level of proximity between the front personnel and consumers. Due to this feature, social factors such as demography, social-economic status, education, preferences of consumers have an enormous influence on effective relations (Subramony 2017). We consider the three main categories of services: (Lovelock 1999).

1. People-processing services that involve each customer directly in delivery of services targeted at the customer's physical person.
2. Possession-processing services targeted at physical objects belonging to the customer.
3. Information-based services are the most interesting category of services from the standpoint of global strategy development, because they depend on the transmission or manipulation of data in order to create value.

Cooperation with various types of users and investments in the knowledge management affects the current process innovations positively (Ashok et al. 2016). Various attributes of a service product are a key for drawing the attention of potential clients. It is connected with acting collectively, which may be simpler due to proper public policy that takes into consideration specificity of an innovation process and infrastructure of the sector (Aboal et al. 2015). Services are often evaluated through experience or are simply impossible to assess—they are mainly based on trust (Bitner and Zeithaml 2003). Grönroos notices that clients expect that they will be provided with services which naturally bring technical quality which is understood as quality outcome and quality functioning, i.e., the quality of service provision course and interpersonal contacts (Grönroos 2007).

The aim of the performed research is identification of differences in attitudes toward running service business activity of progressive character by means of a comparative analysis of two regions from the northern and eastern Poland.

Westpomeranian region (voivodship) is located at the western border of Poland and neighbors with Federal Republic of Germany. Podlaskie region (voivodship) is located at the eastern border of Poland and neighbors with Lithuania and Belarus. Due to the different social-economic development, the provinces in the east of the country are considered less developed and, therefore, called Poland B, whereas the well-developed provinces in the west are called Poland A. This fact makes interesting the comparison of these particular provinces as representatives of well and less developed parts of Poland for the aspect of knowledge and use of progressive services that belong to the most modern type of services.

The study group consisted mainly of men who had been managers of service companies. In case of Westpomeranian, 72% of them had 2–5 year job seniority, and the ones from Podlaskie had the seniority of over 10 years. Progressive services are high standard, modern, innovative, concentrated on reaching a higher level of effectiveness in the context of company's growth. Progressive services are also creative, which means they focus on a specific change in a process, product, or business profile of the company and they use skills and talent of its employees (Skąpska 2017).

2   Podlaskie and Westpomeranian Provinces as Places of Progressive Services

The survey in the chapter is initial research performed by means of the Internet and took place from November 2016 to March 2017. It regarded entrepreneurs from Westpomeranian and Podlaskie provinces. The research was done based on a survey form that consisted of 10 questions. In total, there were 84 forms that had been filled in correctly. The level of response was 20%. That fact makes the research be only the initial phase for further examination.

The study group consisted mainly of men who had been managers of service companies. In case of Westpomeranian, 72% of them had 2–5 year job seniority, and the ones from Podlaskie province had the seniority of over 10 years. Progressive services are high standard, modern, innovative, concentrated on reaching a higher level of effectiveness in the context of company's growth. The performed research concludes that in Podlaskie province over 80% of the respondents have introduced progressive services. The question whether the respondents had introduced a service of progressive nature into their businesses was answered with "definitely yes" by 15%, "rather yes" by about 27%, "partially"—37%. Twelve percent of respondents were not interested at all in this type of service and about 10% of them said they were "rather not interested." The receivers of progressive services can be characterized as: young (44%), with higher education (61%), and local (37%).

The researched enterprises that are set on introducing innovative solutions pay their major attention to maintaining flexible working hours and involvement of service personnel into solving clients' problems. Some of the key factors which

positively affect the success are workplaces equipped with the new technology and stability of employment. Service enterprise managers from Podlaskie think that including a service receiver in the process of service provision and making the service access the around-the-clock access encourages to introduce progressive services. Such services cover advisory services, training, and construction services. Employees of Podlaskie service companies appreciate more the prospects of changing a job rather than obtaining a promotion. The discouraging factor in progressive service provision is mostly the lack of proper financial support from the local government and government institutions. The disposition of service providers to implement innovations is a reliable means of stimulating investments and obtaining new knowledge.

3   Results of Comparative Analysis

The comparative study of Westpomeranian and Podlaskie provinces shows that Westpomeranian features more lively activity with progressive traits. However, it covers different service industries than Podlaskie. Almost 22% of entrepreneurs, while responding to the need for introducing progressive services onto the market, said "yes" and "definitely yes" as well as almost 50% of them concluded "rather yes." In case of Podlaskie province it was 15% and 22%, respectively (Fig. 1).

Clients of this type of services, in both cases, are young people with higher education as well as local service receivers like district, province, and country residents which constitute 40–60% (see Fig. 2). Service standard is accepted by most of the participants, and in case of service managers from Podlaskie, about 25% of them say "definitely yes."
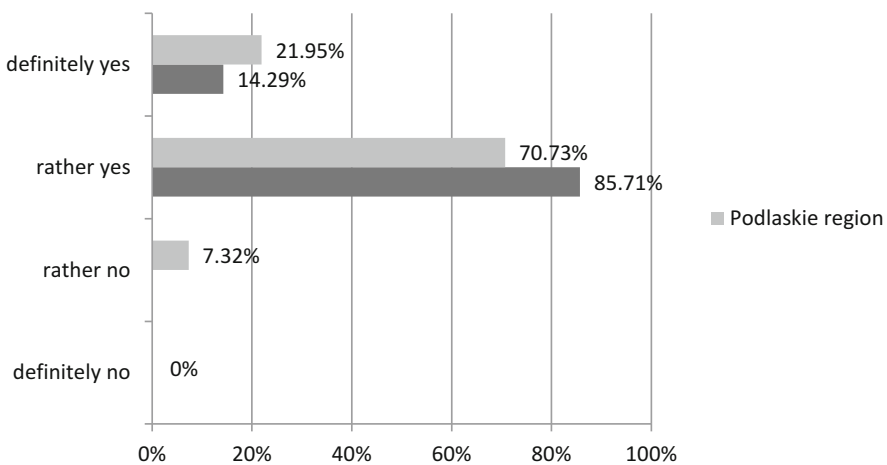
Fig. 1 Receivers of progressive services. Source: Own elaboration based on own research results
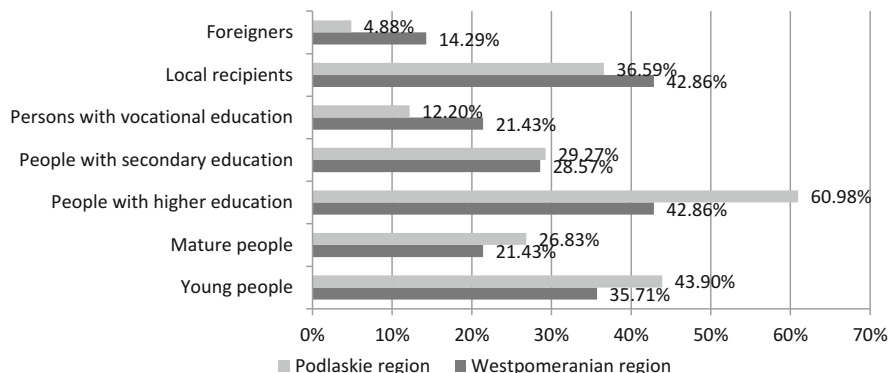
Fig. 2 Receivers of progressive services. Source: Own elaboration based on own research results
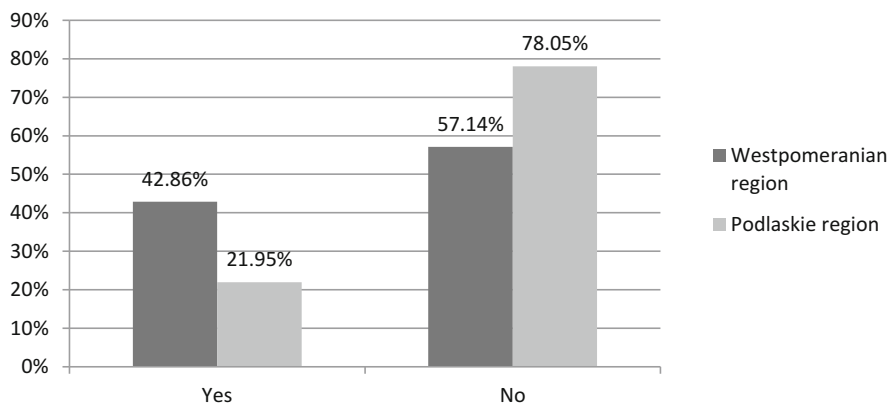
Fig. 3 Profitability of progressive services. Source: Own elaboration based on own research results

In Podlaskie, the level of prices, that are shaped by the national market, according to almost 80% of respondents, does not provide a high level of profitability from this kind of activity in the province. In Westpomeranian province it is highly profitable for 43% of entrepreneurs and it is not for 58% of them. Service providers are made to lower the prices due to intense competition. In this view the offers equally satisfy the tastes and needs of receivers from both provinces (70–85%). Again, more entrepreneurs from Podlaskie concluded with "definitely yes" (Fig. 3).

The intensity of competition, according to both Podlaskie and Westpomeranian service providers, is very big and is referred to by the 36–44% of managers. A certain hardship while running this type of business activity is a high degree of market saturation with those services (approximately 50–56%). In the group of the progressive service determinants, according to the service providers, there are: from Podlaskie—larger-than-average profitability of new services and flexible working hours; from Westpomeranian—progressive job position, staff's empathy inclination for clients and ICT equipment at a post (Table 1).

Table 1 Determinants of progressive services

Positive factors	Podlaskie	Westpomeranian
Larger-than-average profitability of new services	+	
Progressive job position		+
Flexible working hours	+	
Staff's empathy inclination for clients		+
ICT equipment at a post		+

Source: Own elaboration based on own research results

Table 2 Barriers of progressive services

Barriers	Podlaskie	Westpomeranian
Big competition	+	
Irrational employment (improper personnel for company's mission)		+
Lack of proper financial support	+	+
Complicated administrative procedures	+	

Source: Own elaboration based on own research results

Then, the strongest group of development barriers includes: in Podlaskie—big competition, lack of proper financial support, and complicated administrative procedures; in Westpomeranian—irrational employment and to lack of proper financial support (Table 2).

Entrepreneurs from Westpomeranian consider the following types of services to be in the "progressive service" category: trade services (approx. 36%), training and leisure services (15%), and medical services (about 7%). In Podlaskie province: consulting services (about 40%), training services (about 30%), construction services (about 20%), medical and trade services (approx. 15%), advertisement services (10%), information and IT services (about 5%) (Fig. 4).

The common progressive services for both regions include only three categories of services: training, trade and medical services. The additional category called "others" in Westpomeranian included motor industry services (29%), and in Podlaskie province "others" covered 17% of services which constituted hairdressing, designing, and recreation.

4 Differences Between the Provinces in the Answers of the Survey with Mann–Whitney U Test

The Mann–Whitney U Test (Mann and Whitney 1947; Wilcoxon 1949) is one of the nonparametric tests used to verify the hypotheses of the insignificance of differences between the studied groups (group distributions). This test is equivalent to the classical t-Student test for unrelated samples, but the measure of the central tendency for this test is not mean as in the t-test but median. Because the t-Student test require
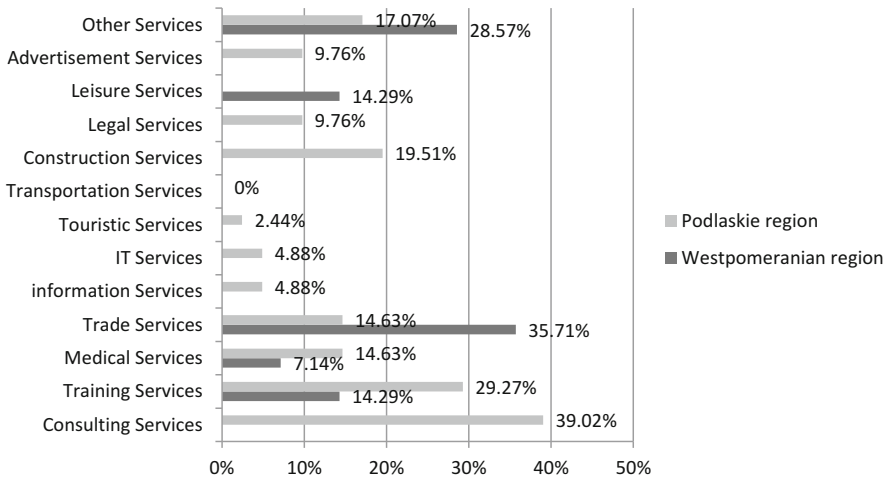
Fig. 4 Structure of progressive service in Podlaskie province and Westpomeranian. Source: Own elaboration based on own research results

normal distribution from the variables tested in both groups and no significant differences in variances, and the Mann–Whitney test does not have such limitations, it is one of the most commonly used homogeneity tests of distributions. Its application is sufficient to meet two conditions:

- Measurement on the order scale (interval).
- Independent model.

It is widely used in a variety of analyses. It is used in sociology, marketing, sociodemographic researches and many more. This test verifies the hypothesis of equality of average values in two populations.

In the samples that have over 20 observations and more, the distribution from the U sample statistics rapidly tends to normal distribution (Siegel 1956; Marascuilo and McSweeney 1977). Hence, next to the value of U (adjusted for bundle rank), the value Z is given (the value of the normal distribution variable) and the corresponding value of p. The results of this test are interpreted essentially the same as for the t-Student. The U test is the most robust nonparametric alternative to the t-Student test for independent samples. In some cases, it may show more power when rejecting the null hypothesis than the t-Student test.

After analyzing the results of the survey, the question appeared whether there were statistically significant differences between the provinces in the answers of the survey. This is the purpose of the U Test described above. The significance level for all calculations is $\alpha = 0.05$ and the hypotheses are:

H_0: There are no significant differences in the answers between provinces.
H_1: There are significant differences in responses between provinces.

Table 3 Results of U-test for question: Are you willing to make changes in the quality of service in the next 1–3 years?

Question	Sum of ranks Podlaskie	Sum of ranks Westpomeranian	Mann–Whitney U	Z value[a]	p value
Are you willing to make changes in the quality of service in the next 1–3 years?	1467.000	2019.000	606.00	−2.31805	0.020447[*]

[a]The value of the normal distribution variable; [*]$p < 0.5$
Source: Own elaboration
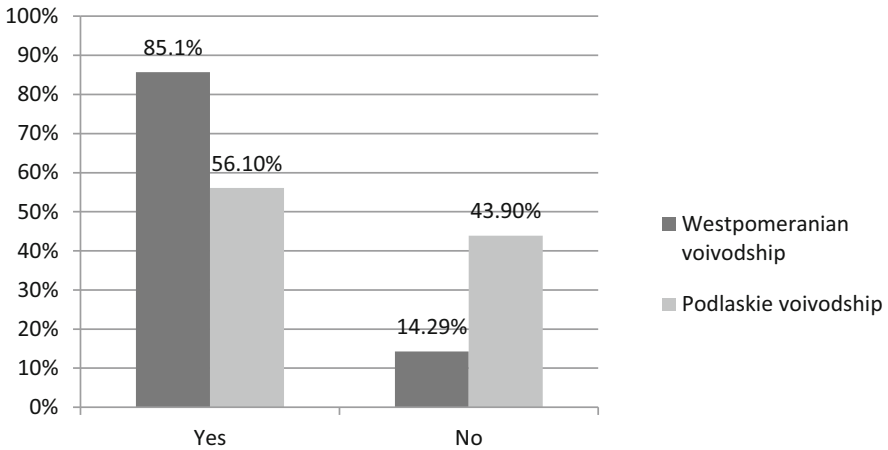
Fig. 5 Answers of the question: Are you willing to make changes in the quality of service in the next 1–3 years? Source: Own elaboration

Below is a discussion of only those results for which statistically significant differences were observed between the examined voivodships.

Differences in the answers received in question: Are you willing to make changes in the quality of service in the next 1–3 years? should be considered as statistically significant (see Table 3).

This means that entrepreneurs who are more inclined to make changes in this area are entrepreneurs from Westpomeranian province than Podlaskie (85.71–14.29% responsed "yes") (see Fig. 5).

Significant differences were also observed for the selected answers in question: What factors determine the tendency to extend the offer of services with progressive services and what are the obstacles? This question was scaled up on the Osgood scale, where "1" meant a weak influence of the factor and "5" a very high influence of the factor. Of the 17 mentioned factors, 5 showed statistically significant differences in their assessment among entrepreneurs in the two studied provinces.

Table 4 Results of Mann–Whitney U-test for selected factors

Factors of question: What factors determine the tendency to extend the offer of services with progressive services and what are the obstacles?	Sum of ranks Podlaskie	Sum of ranks Westpomeranian	Mann–Whitney U	Z value[a]	p value
Workstation equipment in ICT equipment	1425.000	2061.000	564.00	−2.70059	0.006922*
Unreasonable employment (improperly adjusted staff to company's mission)	1344.000	2142.000	483.00	−3.43836	0.000585*
Too few customers at the service point (location)	1494.000	1992.000	633.00	−2.07212	0.038255*
Self-government obstacles (obtaining a concession)	1483.500	2002.500	622.50	−2.16776	0.030178*
Lack of relevant target group	1438.500	2047.500	577.50	−2.57763	0.009948*

[a]The value of the normal distribution variable; $*p < 0.5$
Source: Own elaboration

Significant difference was observed in the factor: ICT workplace equipment. Again, entrepreneurs in Westpomeranian province pointed to a greater influence of this factor on the tendency to expand the offer of services with progressive services (see Table 4) than their colleagues from Podlaskie province.

The next factor of significant differences in the assessment among entrepreneurs from the studied provinces of the considering was: unreasonable employment. In this case, in Westpomeranian province, the unreasonable employment factor also had a greater impact on the tendency to extend the offer of services with progressive services than for entrepreneurs from the province of Podlaskie (Table 4).

The following factor which indicating the statistical significance of differences in responses between the two groups of entrepreneurs was: too few customers at the service point. Similar results were obtained for the factors: local government obstacles and lack of a relevant target group. The Mann–Whitney U test results for those factors are shown also in Table 4. In each of these cases, again, according to the opinion of entrepreneurs from the province of Westpomeranian, these factors have a greater impact on the tendency to extend the offer of services with progressive services than for entrepreneurs from the Podlaskie province.

For the remaining questions, there were no statistical differences in responses, which suggests that the answers to these questions in both provinces were similar.

5   Conclusions

The regional study findings in Poland confirm considerable dissimilarities in the inclination for the introduction of progressive services. It is worth considering the answer to the question of what their prerogatives are. One of the sources may be, as it seems so, different conditions of managing, i.e., running business activity.

Interestingly, the service providers from Westpomeranian know the market better as well as needs of potential service receivers. It is because of the fact that almost 43% of them perform market research at their own expense. Only 20% of the researched companies from Podlaskie carry out such studies of the market and only 5% of them commission such surveys to outside companies.

The use of the Mann–Whitney U test allowed to check which questions differentiate both provinces. Statistically significant differences were observed for the sixth question. Thus, entrepreneurs from the Westpomeranian province are more likely to introduce changes in the nature of services and their quality in the nearest 1–3 years. Considerable distinctions were also recorded for some of the answers to the seventh question: What factors determine the propensity to expand the offer of services with progressive services and what are they hindering? Entrepreneurs from the two provinces rated the following responses differently: ICT workplace equipment, irrational employment, poor traffic at the point of provision of services, local government obstacles, and the lack of the right target group. The entrepreneurs from Westpomeranian province indicated a greater impact of these factors on the propensity to expand the offer of services with progressive services. The aforementioned factors suggest that, in Westpomeranian province, entrepreneurs face internal problems (the first and the second factor of the order) as well as external (other factors). The problem is the local government (factor four) and consumers (third and fifth factor). While the elimination of problems related to equipment and employment lies with an entrepreneur and should be easy to achieve, the local government changes require a change in the minds of decision-makers. On the other hand, the improvement of consumer factors requires appropriate information and promotion campaigns.

Examining the provinces as for the changes that service providers are willing to introduce in the period of 1–3 years one cannot see much of a difference. Despite numerous dissimilarities in particular criteria service managers from the both regions report the necessity to introduce similar modifications, e.g., e-commerce, modern machines, new programs for managing, and additional services that would broaden the activity of a company.

References

Aboal, D., Bravo-Ortega, C., & Crespi, G. (2015). Innovation in the services sector. *Emerging Markets Finance & Trade, 51*(3), 277–283.

Ashok, M., Narula, R., & Martinez-Noya, A. (2016). How do collaboration and investments in knowledge management affect process innovation in services. *Journal of Knowledge Management, 20*(5), 1004–1024. https://doi.org/10.1108/JKM-11-2015-0429.

Barras, R. (1986). Towards a theory of innovation in services. *Research Policy, 15*(4), 161–173. https://doi.org/10.1016/0048-7333(86)90012-0.

Bitner, M. J., & Zeithaml, V. A. (2003). *Service marketing*. New York: The McGraw-Hill.

Evangelista, R. (2000). Sectoral patterns of technological change in services. *Economics of Innovation and New Technology, 9*(3), 183–222. https://doi.org/10.1080/10438590000000008.

Grönroos, C. (2007). *Service management and marketing. Customer management in service competition* (3rd ed.). Chichester: Wiley.

Lovelock, C. (1999). Developing marketing strategies for transnational service operations. *Journal of Services Marketing, 13*(4/5), 278–295.

Mann, H., & Whitney, D. (1947). On a test of whether one of two random variables is stochastically larger than the other. *Annals of Mathematical Statistics, 18*(504), 50–60.

Marascuilo, L. A., & McSweeney, M. (1977). *Nonparametric and distribution-free method for the social sciences*. Monterey, CA: Brooks/Cole Publishing.

Siegel, S. (1956). *Nonparametric statistics for the behavioral sciences*. New York: McGraw-Hill.

Skąpska, E. (2014). Development of the service sector in Poland at the turn of the century. In *Tendencies, determinants, perspectives*. Saarbrücken: LAP Lambert Academic Publishing.

Skąpska, E. (2017). *Innovative entrepreneurship evaluation in opinion of service company managers in Podlaskie province.* Working papers, 115, [online]. Accessed January 2018, from http://www.badania-gospodarcze.pl/images/Working_Papers/2017_No_115.pdf

Subramony, M. (2017). Service organizations and their communities: Perspectives and new directions and new directions for management research. *Academy of Management Perspectives, 31*(1), 28–43.

Wilcoxon, F. (1949). *Some rapid approximate statistical procedures*. Stamford, CT: Stamford Research Laboratories, American Cyanamid Corporation.

Application of Selected Optimization Methods in Car Distribution Planning on the Example of Polish Market

Marta Jarocka

Abstract At present, many transportation companies can boast about their new and modern transport fleet. However, only few of them have advanced decision support software for route planning. Most often the decisions related to the organization of transport depend on the experience of the staff. The chapter takes an optimisation-based perspective of the problem of work organization for a given means of transport in the distribution of passenger cars. The author illustrates selected methods of optimizing transportation services which can be used to improve the flow of vehicles from the loading point to the car dealer. One of the methods presented in the chapter is a technique based on permutations and the evolutionary method, the other—the branch and bound method with Little algorithm. They are used to solve the most-known combinatorial problem—the Travelling Salesman Problem. The main objective of the chapter is to show the possibility of using these methods in a simple way, without using specialized software. In addition, apart from the simplicity of their use, the application of these methods could help to optimize route planning, shorten the working time of drivers, and consequently increase the economic efficiency of the distribution system of a transportation company. Eventually, the chapter provides an example of solving the vehicle routing problem together with its analysis.

Keywords Vehicle routing problem · Travelling salesman problem · Evolutionary method · Branch and bound · Little algorithm

1 Introduction

Planning distribution of goods, in particular designating routes, constitutes a significant operational aspect of many enterprises. The objective of transportation planning is the highest possible level of using the potential of the transport fleet, at the

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shortest route and time of carrying the load, at the same time lowering the unit cost in transport (Liana and Pisula 2014). The problem of transportation planning is of particular significance to the transportation company, whose chief business operation relies on transportation. It can be claimed that transport determines the efficient functioning of an enterprise. The share of transportation costs in logistic costs is considerable. It can even reach 45% (Jakubowska and Piechocka 2015). Nowadays, transportation enterprises struggle with high costs of their activities and attempt to find a way to minimize their expenses. Their boards often ask a question: how to plan the routes for drivers? The solution to their problems can be facilitated by means of optimization. Hence, there is a need for optimizing this area, which can decrease maintenance costs, but also influence the competitive advantage of a company. Solving the optimization problem is extremely difficult. It requires using complicated mathematical methods, which belong to the methods of operations research.

The application of methods of operations research in issues connected with transport organization is very popular in literature. Studies in this scope concern such issues as:

– Transportation problems (e.g., Singh et al. 2012; Mathur et al. 2016; Kumar 2017)—optimization of transporting goods between different suppliers and different customers.
– Assignment problem (e.g., Pashchenkoa et al. 2015; Notomista et al. 2016)—optimal distribution of transportation tasks in relation to own resources.
– Network flow problem (e.g., Dhamala and Pyakurel 2016; Monreal 2017)—the problem of the shortest route, the problem of the maximum flow, the problem of network flow at the minimum cost.

The literature frequently focuses on the issue of Vehicle Routing Problems (VRP). This notion develops the common and one of the oldest problems of optimization—the Travelling Salesman Problem (TSP).

The chapter presents two methods of optimizing transportation services which can be used to solve the Travelling Salesman Problem. One of the methods is a technique based on permutations and the evolutionary method, the other—the branch and bound method with Little algorithm. The main objective of the chapter is to show the possibility of using these methods in a simple way, without using specialized software. Moreover, the application of these methods could help to optimize route planning, shorten the working time of drivers, and consequently increase the economic efficiency of the distribution system of a transportation company.

2 The Vehicle Routing Problem (VRP)

The classical vehicle routing problem was for the first time conceptualized in 1956 by researchers Dantzig and Ramser (1959). The aim of the classical vehicle routing problem (VRP) is to find a set of routes at a minimum cost (the shortest path,

minimized volume of vehicles etc.) at the beginning and ending of the route at the depot so as to fulfill the known demand for all nodes. Each node can be visited only once by only one vehicle, and a single vehicle has a limited capacity. Some concepts also present constraints on the maximum travelling time (Belfiore et al. 2008). The classical issue of route planning offers various options, e.g., Vehicle Routing Problem with Backhauling, Mixed Pickup and Delivery Problem, Periodic Vehicle Routing Problem, Vehicle Routing with Time Windows, Inventory Vehicle Routing (Liana and Pisula 2014).

3 The Travelling Salesman Problem (TSP)

3.1 Description of TSP

The travelling salesman problem constitutes the easiest variant of route planning for a single means of transport. The origins of this concept date back to the eighteenth century, when the mathematician William Rowan Hamilton formulated a problem of the existence of a cycle with the length n in the n-peak graph, called the Hamiltonian cycle. This problem was for the first time described by Karl Menger (Matai et al. 2010). The name TSP comes from the travelling salesman who looks for the shortest way between cities, whereas he wants to visit each city only once. Figure 1 illustrates an example graph that visualizes the analysed issue.

Each pair of cities (nodes) is connected by arches. Each arch is given a weight, which is the distance or cost of transport between two cities. A complete graph has got as many nodes as the number of cities which salesman has to visit. If the salesman visits all cities only once, we can talk of the full cycle, which is called the Hamiltonian cycle. Thus, the TSP solution aims at finding the Hamiltonian cycle with a minimum total weight of the arches.

The main difficulty of this problem is a large volume of data to analyse. This is due to the fact that for n cities the number of combinations of routes amounts to $(n-1)!/2$ (Näher 2011). For example, for 10 cities there are $362,880/2 = 181,440$ possible routes.

Fig. 1 The graph of the example network structure. Source: Author's own study
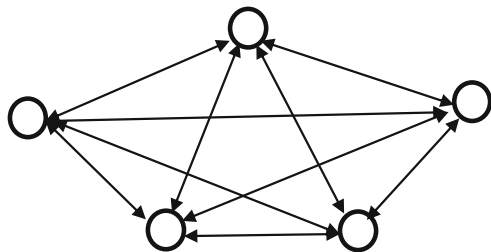
3.2 Mathematical Formulations of TSP

The TSP can be defined as follows. We are given a complete undirected graph $G = <V, E>$, where: V is the set of graph G peaks, $V = \{1, \ldots, n\}$ represents cities, and E is a set of ordered pairs (i, j), nodes of the graph, which is a subset of the Cartesian product $V \times V$, where the arch (i, j) is interpreted as a transition from the node i to the node j. Each arch $(i, j) \subseteq E$ is assigned with the value c_{ij}, which is a distance or cost of transport between the peaks (cities). These form the co-called costs matrix, which is characterized by the following properties (Laporte 1992; Matai et al. 2010):

– The square costs matrix is symmetrical (the cost/distance is the same in both directions) or asymmetrical (the cost/distance is not the same in both directions).
– The elements of the cost matrix comply with the so-called triangle inequality for any three nodes i, j, k, where the below inequality should be met:

$$c_{ij} + c_{jk} \geq c_{ik}. \tag{1}$$

This means that the direct connection i–k is not more expensive than the connection through the indirect j-node.

Scientific literature offers many TSP formulations (Laporte 1992; Öncan et al. 2009). But the most cited mathematical TSP formulation is the concept proposed by Dantzig et al. (1954):

$$\text{Minimize} \qquad \sum_{i \neq j} c_{ij} x_{ij} \tag{2}$$

$$\text{Subject to :} \qquad \sum_{j=1}^{n} x_{ij} = 1, i = 1, \ldots, n, \tag{3}$$

$$\sum_{i=1}^{n} x_{ij} = 1, j = 1, \ldots, n, \tag{4}$$

$$\sum_{i,j \in S} x_{ij} \leq |S| - 1, \tag{5}$$

$$S \subset V, 2 \leq |S| \leq n - 2,$$

$$x_{ij} \in \{0, 1\},$$

$$i, j = 1, \ldots, n, i \neq j.$$

The variables x_{ij} are the decision variables and they can take the value 1, if the arch (i, j) is on the traveling salesman route or 0 otherwise. The goal of the task is to minimize the total distance or transport cost of the route (2). Limitations (3) and (4)

force each node (city) will be visited only once, whereas the limitation (5) is responsible for eliminating the sub-cycle from the solution.

4 Characteristics of an Enterprise and the Process of Distributing Passenger Cars

The enterprise under study is a transportation and forwarding company that provides services connected with the distribution chain of passenger cars. Its business partners are producers and dealers across all Europe but also outside the continent. The enterprise owns over 600 car transporters by means of which it collects and delivers approx. 600 vehicles to its customers every day. As every business entity, the company strives to maintain a high quality of its services. It puts a great stress on a team of qualified drivers as well as technical aspects of its fleet. The trucks are equipped with mobile phones and a system of satellite monitoring GPS, which fosters, e.g., continuous tracking of the vehicle's position. Moreover, the company developed its author's system for planning the distribution of its goods. Thanks to this solution, the dispatcher commissions drivers to transport vehicles, presenting a list of dealers these vehicles must be delivered to. However, it is the driver who decides on the manner of assigning the order of destinations. The route is planned in an intuitive manner, based on the driver's experience. The driver's choice may not be rational, but at the same time optimal. In such cases, the driver exposes the enterprise to additional costs that result from a longer route.

Route planning in such a company and for such a numerous fleet is undoubtedly put to a high risk. Still, taking into account route planning for one car transporter, the issue of arranging the order of unloading vehicles is not complicated as the truck can usually carry maximum seven passenger cars. This problem becomes a classic travelling salesman problem. In order to arrange the order of unloading goods— for such a small number of destinations on the route—the evolutionary method as well as the branch and bound method can be applied. The analysis may incorporate calculations with the use of the MS Excel program.

5 The Evolutionary Method with Permutations

The analysed example assumes that the car transporter driver is supposed to visit seven cities after leaving Bialystok. In order to determine the route, the Hamiltonian cycle must reflect the driver's visit to one location only once. Any optimal TSP solution is a permutation of π of node indices $\{1,\ldots\ldots,n\}$ with such values that the length $f(\pi)$ is minimal, where $f(\pi)$ is expressed as (Węgrzyn 2013):

$$f(\pi) = \sum_{i=1}^{n-1} d_{\pi(i),\pi(i+1)} + d_{\pi(n),\pi(1)} \to \min. \tag{6}$$

In order to determine the optimal solution, the study incorporated the Microsoft Excel 2016 Solver add-in program, which includes one of the versions—Evolutionary Solver. The technique based on permutations and the evolutionary method joins genetic algorithms with linear and nonlinear optimization methods (Węgrzyn 2013). It is based on the evolutionary processes that occur among living organisms. The solution to the problem based on permutations involves the procedure, where each arbitrary order of all unique numbers—representing cities—assigns one of the possible travelling salesman's routes. Such sequences are permutations (without iterations) of integers from 1 to *n*. They can be obtained by means of a condition: *All different*. Distances between individual cities in a given sequence can be acquired with the use of the INDEX function. The sum of these distances determines the length of a given route covered by the driver (Węgrzyn 2013).

The stages of such proceedings in the Excel spreadsheet were described in articles by Węgrzyn (2013) and Baj-Rogowska (2013). Table 1 illustrates the matrix of the distances between the analysed cities.

The cities were designated with random numbers from 0 to 7. Finding the optimal order of cities to visit requires creating another table. Its first column includes a sequence of numbers that are the model's decisive variables. This sequence indicates that the driver departs from city 0 (Bialystok) and travels to 1 (Gdansk) and next to 2 (Cracow), 3 (Lodz) via cities marked with digits from 4 to 7, and in the end returns to city 0 (Bialystok).

Determining the distance between the cities in a given sequence requires the application of the INDEX function in the second column (table; no_row; no_column). This function returns the value of the cell within table cells (the distance matrix). This is a cell at the intersection of the row with the number no_row and the column with the number no_column in Table 1.

The next stage in searching for the optimal route involves running the tool Solver. The problem requires finding such an optimal sequence of numbers that can minimize the entire length of the route. Therefore, the objective function is a sum of distances recorded in the second column of Table 2. The decisive variables are numbers from 1 to 7 that represent cities. The limiting conditions are *All different*. They can be acquired by selecting *dif* in the window *Add constraint*. As a result of the selection of this constraint together with the evolution method, Solver finds such a set of cyclic permutations of numbers referring to cities so that the entire length of the route between them is possibly shortest (Węgrzyn 2013). Table 3 illustrates an optimal solution.

The car transporter driver should depart from Bialystok and head for Warsaw, next Lodz, Cracow, Wroclaw, Poznan, Szczecin, Gdansk and eventually return to Bialystok. In such a case the optimal route equals 2044 km.

Table 1 The matrix of the distances between the analysed cities (in kilometer)

City and its number		Bialystok	Gdansk	Cracow	Lodz	Poznan	Szczecin	Warsaw	Wroclaw
		0	1	2	3	4	5	6	7
Bialystok	0	0	397	494	324	498	760	199	542
Gdansk	1	397	0	557	327	338	353	417	555
Cracow	2	494	557	0	244	451	665	298	271
Lodz	3	324	327	244	0	218	486	136	217
Poznan	4	498	338	451	218	0	271	310	173
Szczecin	5	760	353	665	486	271	0	572	412
Warsaw	6	199	417	298	136	310	572	0	347
Wroclaw	7	542	555	271	217	173	412	347	0

Source: Own study

Table 2 The data for Solver

Sequence	Distance
0	–
1	397
2	557
3	244
4	218
5	271
6	572
7	347
0	542
Total distance	3148

Source: Author's own study

Table 3 The optimal solution

Sequence	Distance	Cities
0	–	Bialystok
6	199	Warsaw
3	136	Lodz
2	244	Cracow
7	271	Wroclaw
4	173	Poznan
5	271	Szczecin
1	353	Gdansk
0	397	Bialystok
Total distance	2044	–

Source: Author's own study

6   The Branch and Bound with a Little Algorithm

Branch and bound (B&B) is one of the main tools that solves NP-hard discrete optimization problems. A B&B algorithm searches the complete space of solutions for a given problem for the best one (Clausen 1999). The algorithm for solving the travelling salesman problem was for the first time presented in 1963 by Little et al. (1963). According to the authors, while searching for the optimal solution, the following scheme should be observed: the set of all tours is divided into growingly small subsets by means of one of the two procedures, i.e., branching. Such a breakup is aimed at reducing the number of combinations required for finding the optimal solution. The procedure involves calculating a lower bound (LB) on the length of the tours for each subset. Further divisions are assigned with such a subset that has a smaller lower bound value. The resulting subset should contain a single tour with a length that is less than or equal to some lower bounds for each tour.

The scheme below illustrates a solution of the example under analysis with the use of Little algorithm.

Table 4 The matrix of lengths between the analysed cities

City	Bialystok	Gdansk	Cracow	Lodz	Poznan	Szczecin	Warsaw	Wroclaw	Min
Bialystok	∞	397	494	324	498	760	199	542	199
Gdansk	397	∞	557	327	338	353	417	555	327
Cracow	494	557	∞	244	451	665	298	271	244
Lodz	324	327	244	∞	218	486	136	217	136
Poznan	498	338	451	218	∞	271	310	173	173
Szczecin	760	353	665	486	271	∞	572	412	271
Warsaw	199	417	298	136	310	572	∞	347	136
Wroclaw	542	555	271	217	173	412	347	∞	173
Min	63	82	98	0	0	26	0	0	

Source: Author's own study

Step 1 Construct a matrix of lengths between the analysed cities (Table 4).

Step 2 Search minimum values in rows and subtract them from all elements of each row. Apply the same process for each column. As a result, each row and column will have at least one value equalling 0 (Table 5).

Step 3 Calculate the sum of all subtracted values in step 2. The result constitutes the first lower bound of the optimal solution, LB = 1928.

Step 4 Next, reduce the dimension of the matrix. Search for the smallest element in each row and column, disregarding the zero value (account for zero value only after it has occurred at least twice). After determining the smallest elements, choose such two (one for each row and column) which maximally increase the lower bound after adding them to the value of the lower bound. Moreover, only such a pair of elements can be selected, for which the zero value exists at the intersection of a row with a column, where these elements occur. The chosen values are added to the LB computed in step 3 to obtain a new lower bound. Based on the data in Table 6, select numbers 0 and 116. In such a manner the first connection Bialystok–Warsaw (or Warsaw–Bialystok) is established.

The new LB value is expressed as LB = 1928 + 116 + 0 = 2044.

Step 5 Reduce the length matrix, removing from it the row Bialystok and the column Warsaw. Place the symbol ∞ at the intersection of the row Warsaw and the column Bialystok, since this route has already been selected (Table 7).

Step 6 Apply the same procedure for each following matrix in accordance to steps 4 and 5 in order to obtain a matrix without zero values. Compute the ultimate value of the lower bound that indicates the entire distance to be covered.

In the analysed example, the optimal solution obtained with the use of the branch and bound method expressed the same result as the solution acquired by means of the evolutionary method with the use of the Solver tool. Therefore, the car transporter driver should follow the instructions presented in Fig. 2.

As a result of optimizing the tour of the car transporter—both with the permutation-based method accompanied by the evolutionary method as well as the branch and bound method with Little algorithm—the driver should depart from Bialystok and visit the analysed cities in the following order: Warsaw, Lodz, Cracow, Wroclaw, Poznan, Szczecin, and Gdansk.

7 Conclusions

The chapter presents the possibility of using two simple methods for solving the Travelling Salesman Problem such as a technique based on permutations and the evolutionary method as well as the branch and bound method with Little algorithm for planning the distribution of passenger cars in a transportation and forwarding

Table 5 The result of step 2

City	Bialystok	Gdansk	Cracow	Lodz	Poznan	Szczecin	Warsaw	Wroclaw	Min
Bialystok	∞	116	197	125	299	535	0	343	116
Gdansk	7	∞	132	0	11	0	90	228	0
Cracow	187	231	∞	0	207	395	54	27	27
Lodz	125	109	10	∞	82	324	0	81	10
Poznan	262	83	180	45	∞	72	137	0	45
Szczecin	426	0	296	215	0	∞	301	141	0
Warsaw	0	199	64	0	174	410	∞	211	0
Wroclaw	306	300	0	44	0	213	174	∞	0
Min	7	83	10	0	0	72	0	27	

Source: Author's own study

Table 6 The result of step 4

City	Bialystok	Gdansk	Cracow	Lodz	Poznan	Szczecin	Warsaw	Wroclaw	Min
Bialystok	∞	116	197	125	299	535	0	343	116
Gdansk	7	∞	132	0	11	0	90	228	0
Cracow	187	231	∞	0	207	395	54	27	27
Lodz	125	109	10	∞	82	324	0	81	10
Poznan	262	83	180	45	∞	72	137	0	45
Szczecin	426	0	296	215	0	∞	301	141	0
Warsaw	0	199	64	0	174	410	∞	211	0
Wroclaw	306	300	0	44	0	213	174	∞	0
Min	7	83	10	0	0	72	0	27	

Source: Author'a own study

Table 7 The result of step 5

City	Bialystok	Gdansk	Cracow	Lodz	Poznan	Szczecin	Wroclaw	Min
Gdansk	7	∞	132	0	11	0	228	0
Cracow	187	231	∞	0	207	395	27	27
Lodz	125	109	10	∞	82	324	81	–
Poznan	262	83	180	45	∞	72	0	45
Szczecin	426	0	296	215	0	∞	141	0
Warsaw	∞	199	64	0	174	410	211	64
Wroclaw	306	300	0	44	0	213	∞	0
Min	–	83	–	0	0	72	27	

Source: Author's own study

Fig. 2 Optimal route.
Source: Author's own study
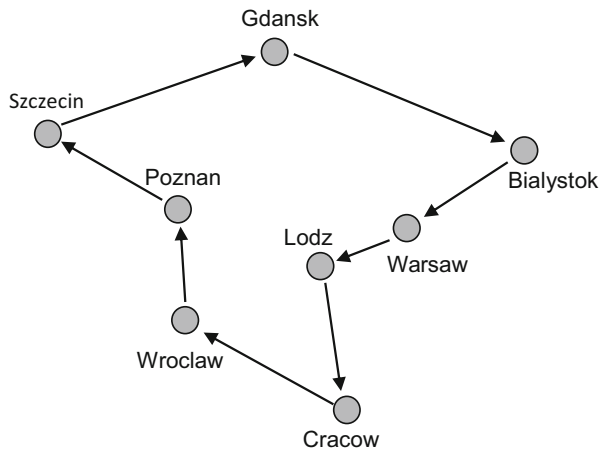
company. Designating routes to be covered by the car transporter can involve the application of MS Excel program. The presented methods can also be implemented in author's programs that aim at optimizing transportation costs.

However, there are some drawbacks to the presented algorithms. They can solve a very simple problem of route planning which takes into consideration only one means of transport. Moreover, the analysed case disregards other, significant constraints imposed on the driver, such as: the driver's working time or customers' time windows. Hence, the process of optimizing transportation costs should account for the above assumptions. The author is conscious of the downsides to the described algorithms but nonetheless attempted to draw attention to the existence of simple and, at the same time, useful methods for route planning. The application of such simple algorithms in planning operations of a transportation company may contribute to reducing transportation costs, shortening drivers' working time, improving the company's image and—as a result—boosting the company's market competitiveness.

References

Baj-Rogowska, A. (2013). Planowanie tras z wykorzystaniem narzędzia Solver jako zadanie logistyczne w małej firmie (Route Planning with the Use of Solver Tool, as a Logistic Task in a Small Company). *Prace Naukowe Wyższej Szkoły Bankowej w Gdańsku, 28*, 169–178.

Belfiore, P., Tsugunobu, H., & Yoshizaki, Y. (2008). Scatter search for vehicle routing problem with time windows and split deliveries. In: T. Carić & H. Gold (Eds.), *Vehicle routing problem* (pp. 1–14). InTech [online]. Accessed December 12, 2017, from https://bib.irb.hr/datoteka/433524.Vehnicle_Routing_Problem.pdf

Clausen, J. (1999). *Branch and bound algorithms principles and examples* [online]. Accessed December 13, 2017, from http://janders.eecg.toronto.edu/1387/readings/b_and_b.pdf

Dantzig, G. B., Fulkerson, D. R., & Johnson, S. M. (1954). Solution of a large-scale traveling-salesman problem. *Operations Research, 2*, 393–410.

Dantzig, G. B., & Ramser, J. H. (1959). The truck dispatching problem. *Management Science, 6*(1), 80–91.

Dhamala, T. N., & Pyakurel, U. (2016). Significance of transportation network models in emergency planning of urban cities. *International Journal of Cities, People and Places, 2*(1), 58–76.

Jakubowska, A., & Piechocka, K. (2015). W poszukiwaniu optymalnej trasy – Wybrane algorytmy w zastosowaniu do problemu komiwojażera (In search of the optimal route selected algorithms applicable to the traveling salesman problem). *Journal of Translogistics, 2015*, 7–23.

Kumar, L. (2017). Comparative analysis of different methods for solving fuzzy transportation problem. *International Journal of Statistics and Applied Mathematics, 2*(4), 19–21.

Laporte, G. (1992). The traveling salesman problem: An overview of exact and approximate algorithms. *European Journal of Operational Research, 59*, 231–247.

Liana, M., & Pisula, T. (2014). Problem wyboru tras dostaw z uwzględnieniem różnych środków transport (The problem of optimal choice of supply routes with different means of transport). *Logistyka, 6*, 6719–6725.

Little, J. D. C., Murty, K. G., Sweeney, D. W., & Karel, C. (1963). An algorithm for the traveling salesman problem. *Operations Research, 11*(6), 972–989.

Matai, R., Singh, S. P., & Mittal, M. L. (2010). Traveling salesman problem: An overview of applications, formulations, and solution approaches. In: D. Davendra (Ed.), *Traveling salesman problem, theory and applications* (pp. 1–24). InTech. Accessed December 13, 2017, from http://www.intechopen.com/books/traveling-salesman-problem-theory-and-applications/traveling-salesmanproblem-an-overview-of-applications-formulations-and-solution-approaches

Mathur, N., Srivastava, P. K., & Paul, A. (2016). Trapezoidal fuzzy model to optimize transportation problem. *International Journal of Modeling, Simulation, and Scientific Computing, 7*(3), 1650028.

Monreal, C. O. (2017). Transportation network modeling and ITS research group. *IEEE Intelligent Transportation Systems Magazine, 9*(3), 151–155.

Näher, S. (2011). The travelling salesman problem. In B. Vöcking et al. (Eds.), *Algorithms unplugged* (pp. 383–391). Berlin: Springer.

Notomista, G., Selvaggio, M., Sbrizzi, F., Di Maio, G., Grazioso, S., & Botsch, M. (2016). A fast airplane boarding strategy using online seat assignment based on passenger classification. *Journal of Air Transport Management, 53*, 140–149.

Öncan, T., Altınel, I. K., & Laporte, G. (2009). A comparative analysis of several asymmetric traveling salesman problem formulations. *Computers & Operations Research, 36*, 637–654.

Pashchenkoa, F. F., Kuznetsovb, N. A., Ryabykhc, N. G., Minashinac, I. K., Zakharovac, E. M., & Tsvetkovad, O. A. (2015). Implementation of train scheduling system in rail transport using assignment problem solution. *Procedia Computer Science, 63*, 154–158.

Singh, S., Dubey, G. C., & Shrivastava, R. (2012). A various method to solve the optimality for the transportation problem. *International Journal of Mathematical Engineering and Science, 1*(4), 21–28.

Węgrzyn, J. (2013). Rozwiązywanie problemu komiwojażera za pomocą Metody Ewolucyjnej z Excela 2010 (Solving of traveling salesman problem using evolutionary solver for excel 2010). Gospodarka Materiałowa i Logistyka, 12, pp. 11–17. Following: A. Chaudhuri, K. De, A study of traveling salesman problem using fuzzy self organizing map. In: D. Davendra (Ed.), 2010. *Traveling salesman problem, theory and applications* (pp. 197–212). InTech.

The Role of Business Analysis for Mechanical Engineering and Metalworking Companies

Inese Mavlutova and Bary Mavlutov

Abstract The aim of chapter is to investigate present position of companies in mechanical engineering and metalworking sector, to prepare proposals for management improvement and financial performance strengthening in these companies. We applied different methods in the research such as theoretical sources, statistical data analysis, forecasting, and other financial calculations. Quantitative research methods were used to analyze trends and structural problems in industry. Additional methods such as sector expert interviews and personal observations were used. Company's financial independence increases the need to carry out the business analysis of the company in order to improve its efficiency and profitability. Mechanical engineering and metalworking sector is one of the leading industries in Latvia. This industry is a diverse sector encompassing many subbranches. In a saturated market with a high level of competition, it is essential for companies to plan their business strategy in order to secure a sustainable work, keep job places, and secure stability. Managers need information and knowledge about the company's business activities and financial results of it in order to diversify internal and external resources, they need to set problem segments and modify the activity model. As a result of the research the authors have drawn the conclusions that in order to carry out business efficiency evaluation.

Keywords Business analysis · Business activity · Financial position · Mechanical engineering

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1 Introduction

The company effectiveness depends on the manager's skills, experience, and the competence to take adequate decisions. Professional manager's decision can improve financial position of the company. Business analysis is an essential part of management that managing directors of companies use to make important decisions in relation to investment and financing questions. Companies are independent both economically and judiciary. In order to improve company's efficiency it is necessary to conduct its financial analysis. In a situation of the high competition on the market, it is necessary for companies' executives to plan its operational strategy in order to secure a continuous development, save job places and overall stability. Information and knowledge on business activities and financial result is needed for executives.

The aim of the research is to investigate present position of companies in mechanical engineering and metalworking sector, to prepare proposals for management improvement and financial performance strengthening in these companies. Financial analysis allows to diversify the companies' internal and external resources for different tasks, to identify problematic segments of business, and to modify the business model.

Stable financial performance allows the company to be more attractive to investors. Mechanical engineering and metalworking industry is one of the leading industries in Latvia. The manufacturing sector is holding third place in Latvian GDP. Mechanical engineering is not a homogeneous but a very diversified industry which covers a wide range of subsectors. Mechanical engineering and metalworking industry holds a leading place in the Latvian export structure, providing a significant share of total exports of goods (MASOC 2016). Managers have to pay more attention to asset structure in order to improve stock sales, to apply the modern financial management methods, financial modeling and forecasting, cash flow planning; they have to carry out evaluation of investment projects, to assess the business and financial risks.

2 The Essence of Business Analysis

The main criterion to ensure successful activity of the company is the financial solvency. Effective utilization of the financial and other material resources is ensured by the management decisions based on information from financial analysis (Revsine et al. 2011). The main result of financial analysis is to gain information about the company's characteristic features. Normally, financial analysis is carried out to support the company's solvency, revenue, profit, and the amount dividends or the company's market value (Brigham 1989).

The main task of the business analysis is to identify level and changes in growth of indicators of the company in recent years. The company's growth is evaluated as
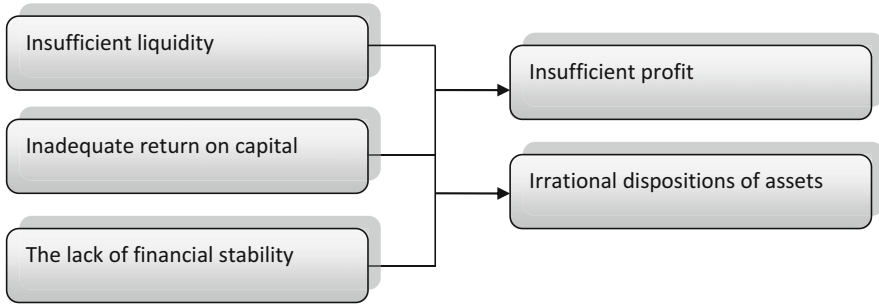
Fig. 1 The company's financial position problems. Source: Based on Koljcova and Rjabih (2007)

the net sales, profit, assets value, own capital, and total capital changes. Long-term analysis helps to clarify the dynamics of change, whether it is positive, to find out the main problems and predict the company's development strategy (Saksonova 2006).

Before starting the study of financial indicators, the executive must identify problems, set test parameters to formulate the reasons for change in the company's performance and financial position. Nevertheless, companies represent different industries and they may face mainly such problems as low solvency; low capital profitability; and decrease of financial independence (Van Horne and Vachowicz 2008).

Escalation of insolvency and/or solvency problems and decline of the indicators might be resulted from the business activity which is not sufficient to keep acceptable financial conditions. Companies have no possibilities to keep adequate solvency level or have no rational distribution of profit (Bragg 2007). But not always decline of indicators means that the company is having problems. On the financial problems can begin to judge when ratio falls below the acceptable level. Figure 1 reflects the main possible causes for worsening of financial position.

First of all sales decrease should be assessed. If the sales volume decreases, it is necessary to examine its causes. Usually insufficient demand for goods can be the main cause. But often other cause exists—not sufficiently thought out product promotion market. Creating a new product which will be required by the market but will not need additional funds for purchase of new equipment will be able to increase sales volumes. If the company has decided to introduce new products, break-even point should be calculated.

Next to be considered is incomes and expenses. The cause of high costs can be high prices for raw materials, auxiliary materials, and services suppliers. In this case, one of the ways how to reduce costs price is a new supplier search, looking for those who offer lower prices. But there are other reasons, which increase costs. The same company can be wasteful in lighting, heating, water use, etc. In particular, it is characterized for large companies when the office is illuminated not only during the business day and when the heating is not renovated. Smaller companies may have costly phone bills, travel expenses etc.
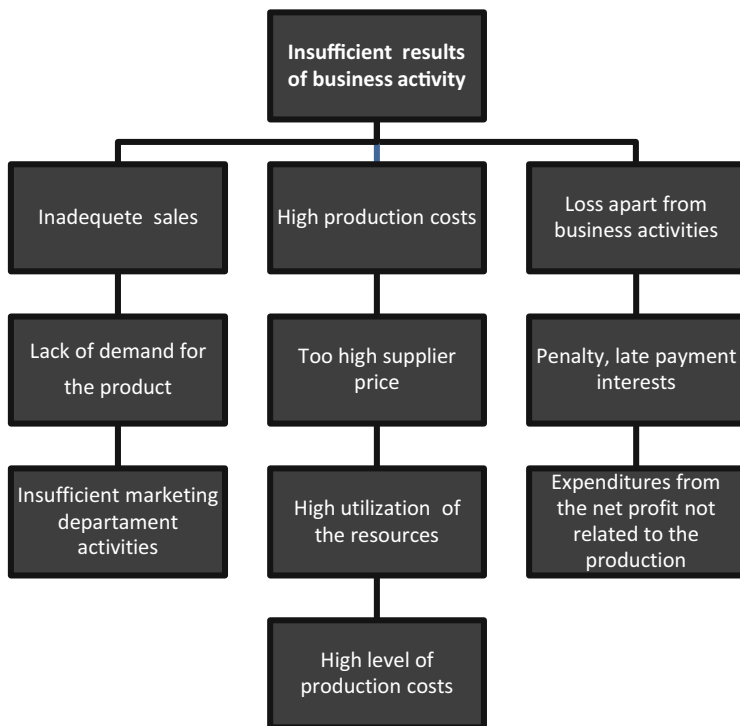
Fig. 2 Insufficient results of business activity and reasons causing it. Source: Based on Koljcova and Rjabih (2007)

Another possibility to reduce the costs is fixed asset write-offs. Idle fixed assets maintenance becomes too expensive for the company, because it requires too much investment for upkeep and repairs. Refusal of fixed assets leads to outsourcing. At the company, which increases the production volumes, cost optimization can be achieved through the process opposite outsourcing when the company waives purchased goods and materials, but to develop them itself.

One of the reasons of the deterioration of company financial position is insufficient profit. Profit has influence on all indicators of financial results (Glen 2013). Calculation of profit or losses, profitability and accrued capital ratios are used for the analysis of revenue and costs. Main factors influencing profit is the product price, costs, and sales volume (see Fig. 2).

The other reason of the financial indicators which describe the company's business operations deteriorating is investments (investments in production facilities construction, acquisitions of fixed assets, acquisitions of other companies, etc.). Investment can be a cause for the decrease of the following indicators—liquidity, financing stability and profitability, although on first glance does not appear, regularity.

Additional reason what can be noted is irrational usage of current assets—not professionally considered stock management and debtor's policy. Providing

uninterrupted supply of raw materials and avoiding disturbances in the production process, the company improves the performance. Organizational measures to optimize the accounts receivable policy includes conditions for the establishment of procedures for billing (customer register, the date of payment of the invoice date, the buyer's contact person responsible).

Low return on invested capital does not provide the interests of the owners. Mainly it is influenced by the high price of the financial sources (Brigham and Gapenski 2008). In order to ensure a company's reasonable financial independence, it is important to choose capital structure that increases return on equity. Managers may have a personal interest in the company's development direction. Potential conflicts of company managers and owners, if they are not stipulated in the special agreement, can become a basis for analytical work for these specific purposes (Bernstein 1993). In practice, the analysis can be started from the previously known "narrow" places at the company, although in other cases, the "narrow" places are elucidated above.

3 Company's Business Analysis Indicators

In order to develop the company's business strategy detailed financial analysis of the dynamics of several years must be carried out. Express analysis is quite enough to compare the data for beginning and end of the period. Financial analysis which is based on the balance sheet and profit and losses reports pays attention to the "narrow" places in the company's activities and financial position.

Financial analysis is based on absolute and relative indicators. In practice, financial analysis is applied following groups of indicators:

1. Profitability—ability to generate profit.
2. Solvency ratios—indicators for the company's degree of independence from external sources of financing, changes in interest rates.
3. Liquidity—short-term solvency.
4. Assets utilization rates—the company's operating efficiency indicators that show the efficiency and return on investments.

Strategic financial analysis differs from operational analysis not only with different goals and tasks, but also with various methodology of the analysis. In strategic analysis those indicators which describe possible perspectives of development of the company are reviewed. Evaluating the dynamics of the main financial indicators for manufacturing companies it is required to compare the speed of changes of those indicators: the revenue must rises faster than the company's assets (capital), namely the company's resources are utilized more efficiently. The company's economic potential, in comparison with the previous period, increases (Mavlutova 2011).

For strategic financial analysis Financial Analysts Association (CFA Institute 2008) recommends to analyze financial ratios, as reflected in Table 1.

Table 1 Core financial indicators for strategic financial analysis

Ratio	Formula
Return on equity, ROE	Net profit $\times$ 100/Equity
Pretax margin, ROS	Pretax profit $\times$ 100/Net turnover
Stock turnover	Net turnover/Stock
Accounts receivable turnover	Net turnover/Debtors
Days of sales outstanding, DSO	Debtors $\times$ 360/Net turnover
Fixed assets turnover	Net turnover/Long-term investments
Total liquidity ratio, CR	Current assets/Current liabilities
Quick liquidity ratio, QR	Cash + Short-term financial investments + Debtors/ Current liabilities
Debt liabilities toward capital (debt-to-capital, DR)	Liabilities/(Liabilities + Equity)
Interest payment coverage ratio, ICR, (ISCR)	Profit before interest and taxes/Interest payments

Source: CFA Institute (2008)

The company's return on equity or profitability considerably shows how effective are usage of owners invested capital to gain the profit. Return on sales shows remaining share of income which the company's managers can see as the profit from each euro received from the sales. Thereby this profitability ratio shows effectiveness of company business activity. For analysis of the efficiency of working capital management in the mechanical engineering and metalworking companies the current assets and debtor's turnover ratios are utilized.

Judging by the long-term investment, it should be noted that the most important long-term active in mechanical engineering are fixed assets. Thus, the efficiency of fixed assets management ensures the effectiveness of the strategic assessment framework because it shows the amount of sales for each euro invested in fixed assets. For evaluation of the efficiency of the utilization of fixed assets turnover ratio is applicable.

The essence of liquidity ratio is to evaluate potential ability of the company to pay current liabilities by using working capital. That can testify about unspent money, storage of goods and raw materials that are exceeding current needs, as well as that could point to irrational lending policy that may lead to existence of excessive lending and hopeless debts (Savchuk 2002). Analyzing dynamics of this ratio, factors that create mentioned changes must be studied. For instance, if a growth of the liquidity ratio was mainly connected with unreasonable accounts receivable, it cannot characterize company business activity positively.

The goal of liabilities indicators is to identify the risk of possible insolvency by attracting borrowed capital. Liabilities indicators reflect company dependence from borrowed capital and characterize relations between its owners and creditors (Sneidere 2009).

Calculated ratios can be used for evaluating business activities of manufacturing company, but they must be compared: firstly, with changes within the certain period of time that will help identify whether this activity has relatively improved or grew

Table 2 Additional indicators that can be used for strategic financial analysis

Ratio	Formula
Gross profit margin	Gross profit × 100/Net sales
Return on assets	Net profit × 100/Total assets
Total assets turnover	Net sales/Total assets
Average period of stocks (per days)	Stocks × 360/Costs of goods sold
Average period of creditors (per days)	Suppliers × 360/Costs of goods sold

Source: Author's own study

worse; secondly, ratios that characterize activities of one company, must be compared with ratios of another company which operates in the same field, so that to evaluate productivity of the industry and market competitiveness level; thirdly, calculated ratios must be compared with planned indicators, in order to evaluate compliance of company activities toward defined strategic goals.

Business activity of the company is characterized by the growth rate of the economic. The speed of economic development of manufacturing company is mainly defined by the growth level of returned earnings. That depends on many factors reflecting efficiency of current business (profitability of operational activities, turnover of assets and stocks) and financial activities (dividend policy, financial strategy, choice of equity structure). In order to evaluate business activity of the company more precise within the use of funds and capital perspective, ratios mentioned above must be supplemented (see Table 2).

Profitability indicators define how large profit the company has gained from the management of different resources. The goal of business activity is to increase those indicators. Gross profit margins the most essential indicator that shows effectiveness of company main activities. The return on assets shows how big profit the company has gained from all the assets. It is believed that this direction is one of the more meaningful in financial analysis, despite the fact that the balance sheet constructing principles and reporting deadlines that affect the items in the amounts indicated may distort the results of the analysis (Helfert 1996).

Methodology of business efficiency analysis of company activities described above of course does not provide answers on all questions of analysts and investors about the analyzed company; in return it gives an insight on main realities of the company that is analyzed. So it gives a possibility to compare achieved results of the company with future expectations.

In order to evaluate an effect of factors, which reflect effectiveness of company, modified DuPont pattern is usually used. This pattern reflects an influence of company business and financial activities on profitability ratios. In addition, the company is able to use financial leverage to influence this ratio (ROE). The offered financial analysis is applicable for the determination of the efficiency of mechanical engineering and metalworking companies, efficiency trends, and its determining factors.

4 Opportunities and Problems of Business Activity for Mechanical Engineering and Metalworking Industry in Latvia

European Economic and Social Committee deliberates mechanical engineering and metalworking industry as one of the most important and affluent sectors because of production of machinery, manufacturing systems, components, and other industrial products related to other industries. Metalworking, mechanical engineering, mechanical science industry is diverse and consists of many sectors, covering wide range of different type of activities, including mechanical engineering, machinery science, metal production, production and installation of fabricated metal products, production of electrical equipment, production of vehicles, production of medical equipment, repair and installation of equipment, devices and other activities. Global economy creates threats and opportunities for mechanical engineering and metalworking industry and its manufacturing sector. Competitors are from all over the world, especially companies competitors from Brazil, China, and India are growing. Unfortunately, financial crisis has weakened position of Europe in this competition. In order to increase competitiveness, companies from Europe must develop new strategies, which includes attraction of high qualified specialists, innovations and new technologies (McKinsey and Company 2015a).

In accordance with the Eurostat data a number of companies in Europe, that works in industry and produces fabricated metal products in particular, has decreased. To make correct comparison within this research, six countries were chosen—Latvia, Lithuania, Estonia, Germany, France, and Poland. Table 3 shows that the percentage of employed in manufacturing is highest in Germany and Estonia.

Analyzing Table 4, in the manufacturing industry as a whole, the greatest number of people working in the processing of related businesses was 9%—in Germany.

Table 3 Number of employees in mechanical engineering and metalworking industry in Germany, France, Latvia, Lithuania, Estonia, and Poland, as a percentage of the overall number of the population in 2013

Country	Number of population per country	C Manufacturing		C25 Manufacturing of fabricated metal products, except machinery and equipment	
		Number of employees	%	Number of employees	%
Germany	80,523,746	7,220,296	9.0%	876,965	1.1%
Estonia	1,320,174	104,564	7.9%	12,324	0.9%
France	65,600,350	3,005,971	4.6%	321,356	0.5%
Latvia	2,023,825	120,760	6.0%	10,425	0.5%
Lithuania	2,971,905	197,923	6.7%	12,645	0.4%
Poland	38,062,535	2,347,504	6.2%	283,969	0.7%

Source: Based on Eurostat (2017a, b)

Table 4 Value of mechanical engineering and metalworking industry production in Germany, Estonia, France, Latvia, Lithuania, and Poland from 2010 to 2014 (million EUR)

Country	2010	2011	2012	2013	2014
Germany	2,405,988.0	2,716,944.8	2,707,712.8	2,688,414.0	2,671,308.0
Estonia	9322.0	12,006.9	12,160.5	12,905.6	13,653.3
France	995,932.8	1,063,449.3	1,045,738.8	1,017,549.4	997,681.2
Latvia	7103.7	9234.8	9890.4	9220.9	8677.8
Lithuania	15,424.8	19,728.1	20,664.3	21,191.5	20,140.6
Poland	286,998.9	322,945.0	327,652.0	329,231.5	341,996.6

Source: Based on Eurostat (2017c)

Numerically, they are more than three times larger than all residents of Latvia. The lowest was in France—only 4.6%, despite the fact that the country is one of the largest industrial plants. Latvia had the second lowest rate of 6.0%.

Table 4 shows changes of the total value of mechanical engineering and metalworking industry production in different countries in Europe. Notable, the volume of production in Lithuania and Estonia is much larger than in Latvia. There were positive and negative changes within the period of 4 years. In 2011 there was an increase of production in Germany, but in next 3 years decrease of production is observed. It is seen that in 2014 in comparison with 2013 the value of production decreased almost in all countries (Mavlutova et al. 2017).

Mechanical engineering and metalworking industry is one of the most important sectors in Latvian economy. Development of the industry depends on sales market and situation in international markets. The primary sales markets of Latvia mechanical engineering and metalworking industry are the Europe Union and Eastern markets (Haka 2016). Experts of the Association of Mechanical Engineering and Metalworking Industry (MASOC 2016) consider that since the beginning of 2010, certain stabilization and restoring of growth after the crisis can be observed. Since 2014 indicators were affected negatively due to the economic and political situation in Russia that was followed by decline of export, as well as decrease of metal prices.

A summary of the results of industry experts' interviews, conducted by the authors, indicates that mechanical engineering and metalworking industry is developing quite fast in Latvia. Furthermore, MASOC (2016) points out that material resources (equipment, production premises, warehouses etc.) have remained from socialism period. After 20 years a lot of equipment has aged both technologically and moral; therefore, equipment and tool modernization is being made in the industry. But it is important to mention that comparing to other Baltic countries, development process is much slower, as analyzed data of the Eurostat showed above.

Latvian companies export machinery to countries with larger demand. Approximately 70% of production within the industry is exported. Western Europe partners choose to cooperate with companies that are environment friendly. In order to ensure reputation in this field is necessary to renew an infrastructure—warehouses, IT resources, and energy efficiency. For SMEs it is hard to be competitive in this industry. For Latvian manufacturing companies the core partners in Europe are Scandinavian countries that draw up around 50% of the whole export in Europe,

Table 5 Distribution of total added value in different sectors of production industry from 2010 to 2013 in Latvia (at current prices, thous. EUR)

	2010	2011	2012	2013
C Manufacturing	2,155,641	2,365,339	2,519,189	2,541,057
C25 Manufacturing of fabricated metal products, except machinery and equipment	133,534	183,222	202,297	217,848
C24 Manufacturing of metals	83,207	94,199	62,895	33,026
C27 Manufacturing of electrical equipment	36,794	54,354	63,894	75,993
C28 Manufacturing of NEC equipment, devices and machinery	43,333	60,794	69,918	74,563
C29 Manufacturing of motor vehicles, trailers, and semitrailers	25,802	34,296	41,694	49,241
C30 Manufacturing of other transport equipment	23,239	30,416	28,877	26,301
C33 Repair and installation of machinery and equipment	129,249	135,111	174,402	143,448

Source: CSB (2017)

Table 6 Fixed assets turnover ratio for Latvian metalworking industry companies from 2011 to 2015

	2011	2012	2013	2014	2015	Median
Vairogs M Ltd.	1.58	3.45	5.17	5.06	2.71	4.26
Reserv Inc. Ltd.	10.7	16.54	4.66	13.67	4.76	
Rubate Metal Ltd.	1.11	4.39	5.04	16.6	29.74	
SFM Latvia Ltd.	79.16	24.43	26.56	21.67	8.91	

Source: Calculated by the authors

since Latvian companies may offer competitive prices that can be provided by lower labor costs and logistic.

Table 5 shows that the added value in manufacturing sector increased from 2010 to 2013. Positive changes have emerged in the subsector of fabricated metal products (C25) and in whole manufacturing industry. There was a sharp fall in the sector of manufacturing of metals (C24) starting from 2012, and continued for the next years.

For deeper understanding of mechanical engineering and metalworking industry business performance success and failure impact factors, the authors chose to investigate and mutually compare four metalworking industries companies in Latvia—Vairogs M Ltd., Reserv Inc. Ltd., Rubate Metal Ltd., SFM Latvia Ltd. performance. Companies are among the largest manufacturers of metal constructions; they successfully operate and export their products.

Fixed assets turnover is one of the most important indicators of manufacturing companies that shows the level of business activity. As Table 6 reflects from 2011 to 2015 mostly companies decreased their indicator due to decline of the intensity of usage of fixed assets.

As Fig. 3 shows enterprises Vairogs M Ltd., Rubate Metal Ltd., and SFM Latvia Ltd. have stock turnover much lower than the industry average, companies are not
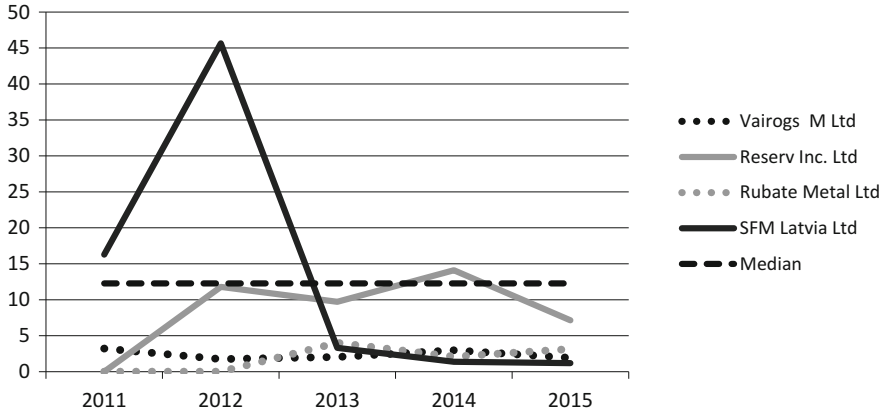
Fig. 3 Dynamics of stock turnover ratio for Latvian metalworking industry companies from 2011 to 2015. Source: Developed by the authors
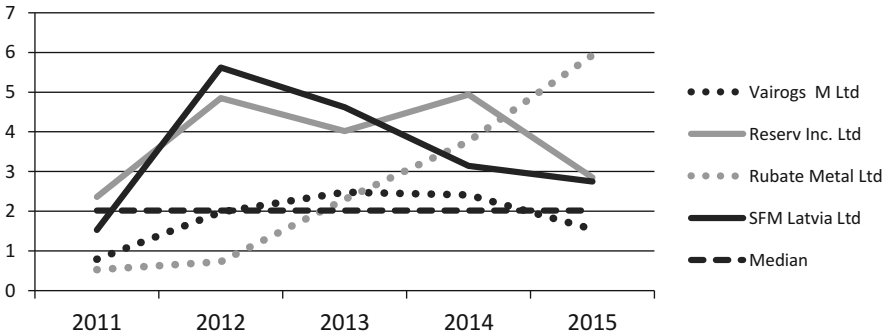
Fig. 4 Dynamics of total assets turnover ratio for Latvian metalworking industry companies from 2011 to 2015. Source: Developed by the authors

able so quickly sell their products as competitors. In general, according to the obtained data, it is seen that the demand for production is falling significantly for companies, and sales are steadily decreasing each year.

The total assets turnover from Fig. 4 shows how effectively the company manages the company's assets, regardless of the source of funding. The industry average is 2.02, in general, all companies with the exception of Vairogs M Ltd. exceed the industry average. The most stable indicator of total assets turnover for 5 years was at Reserv Inc. Ltd., and significant increase has been observed for Rubate Metal Ltd.

The gross profit margin reflects the company's operating efficiency, the success of the company's core business, without taking into account sales and how much the price of the manufactured goods is in line with the market situation. As Table 7 shows by the end of 2015 Vairogs M Ltd., Reserve Inc. Ltd., and SFM Latvia Ltd.

Table 7 Gross profit margin for Latvian metalworking industry companies from 2011 to 2015

|	2011	2012	2013	2014	2015	Median
Vairogs M Ltd.	25.22	12.96	15.87	21.83	17.28	
Reserv Inc. Ltd.	4.30	11.35	7.77	11.47	15.50	13.85
Rubate Metal Ltd.	6.80	−52.37	23.75	17.45	11.58	
SFM Latvia Ltd.	15.85	9.77	16.65	16.30	14.31	

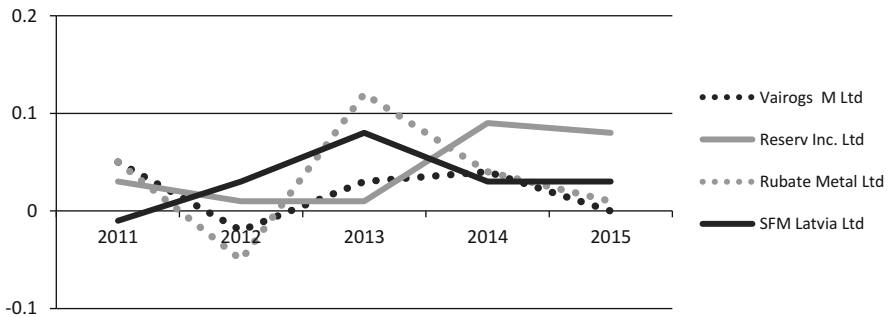Source: Calculated by the authors

Fig. 5 Dynamics of return of assets for Latvian metalworking industry companies from 2011 to 2015. Source: Developed by the authors

had a gross profit margin higher than the industry average, which is positive and indicative of business effectiveness.

The return of assets assesses the quality of the company's management. This is one of indicators that show the company's competitiveness. Figure 5 shows that all investigated companies have a low rate of profitability of assets, which indicates a low level of business competitiveness and inefficient use of assets.

The return on equity shows how efficiently the equity capital employed by owners is used, which is one of the core indicators because it points to the owner's earnings from the investment. Figure 6 below shows the return on equity of the investigated enterprises.

The analysis of selected companies' business activities shows that the increase in equity capital of enterprises is facilitated by the positive results of operations every year, profit is not paid out in dividends, but retained to maintain the company's financial security; companies are able to increase equity capital, thus showing that they operate in a sustainable manner.

The author's compiled MASOC survey of participants of explored sector shows that one of the industry's problems is the lack of highly qualified specialists. Although companies can provide specialists with a competitive salary a large leakage of employees is expected. Reasons for this may be education and emigration, young professionals leave and stay abroad, due to better conditions (MASOC 2016). The survey results also show (see Fig. 7) that this sector still has problems that are related to the business: legislation, the total economic processes in the country,
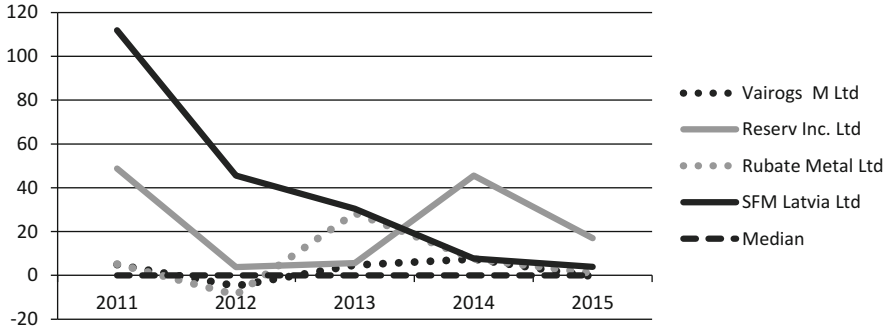
Fig. 6 Dynamics of return of equity for Latvian metalworking industry companies from 2011 to 2015. Source: Developed by the authors

Fig. 7 The main development issues for Latvian mechanical engineering and metalworking companies in 2015 and 2016. Source: MASOC (2016)

and demand for the products. The internal solution to the problem can make a great incentive for further development and increasing performance. The problems associated with the business environment: legal framework, total economic processes in the country and demand were also identified. The solution of these problems can also give impetus to the development in future.

The manufacturing is digitized during the third industrial revolution—all processes are conducted with few specialized programs—just some "mouse clicks to complete" (The Economist 2012). But is considered that in the near future the fourth industrial revolution will begin—cyber physical system that covers the automation, data exchange, and production technologies will be created (McKinsey and Company 2015b). It is the essence of the next phase of the digitization of the manufacturing sector.

Traditional manufacturing business models change; new models are appearing. Companies must be able to quickly recognize new challenges. Competition will increase in the future because of the appearance of new innovative companies. Therefore, existing companies should try to analyze information that can help improve business activity and increase operational efficiency.

Experts predict that over the next two decades technology, environmental, economic and political factors will determine the future of the industry in Europe. Many competitive companies will be created and developed in Europe. The pressure from industry to be globally competitive will create the necessity for companies to pay more attention to constantly changing business environment.

Assessing the current state of mechanical engineering and metalworking industry in Latvia, the impact of global markets should be taken into account. Analyzing the information on recent years the trend toward reduction of output is being observed. First of all, it is influenced by oil and gas extraction and a steady fall in prices in 2015, low prices remained in 2017. However, metal is needed to ensure the natural resources sector with the necessary objects. Therefore, the reduction of the sector's development was influenced by the total demand. The development of construction, general urbanization requires metal structures and their elements.

Taking into consideration the current levels of GDP and its forecasts, the authors have concluded that China is the main sales market over the last 5 years; despite some existing problems China shows the growth trend. Insignificant but stable growth is observed in European Union. The future of the industrial sector holds many challenges. The main task for industrial companies in Latvia will be to create new job places. Growth framework conditions will be increasing the efficiency and innovations in the sector.

5 Conclusions

Different methods of financial analysis could be useful for the evaluation of effectiveness of business activity which are designed for different user groups. These methods differ taking into account complexity and amount of information. The model of analysis should be based on the following financial indicators—liquidity, profitability, turnover ratios as well as working capital and liability ratios.

Mechanical engineering and metal working industry is highly export oriented, on average, around 70% of its production is exported. But business efficiency and productivity of Latvian companies lagging behind the main competitors, the pressure of global competition will encourage company to create new, customized products which will be produced faster and cheaper. It is necessary to analyze the pricing policy.

It is recommended to find opportunities to reduce costs for profitability increase. Companies have to pay more attention to asset structure in order to improve stock sales, they have to reduce stocks levels, which will reduce the stock holding costs

and increase profit, to investigate and to consider the possibility to enter the most profitable export markets.

Executives have to pay attention for applying the modern financial management methods, financial modeling and forecasting, cash flow planning, they have to carry out analysis and evaluation of investment projects to evaluate commercial attractiveness. Managers have to assess the risks, analyze and to calculate the cost of capital. Particular attention should be paid to the business and financial risk management.

Analyzing the current political situation in the Eastern markets the authors recommend to executives of companies to work in direction of expansion of business activities toward the highly developed metalworking Western European markets—such as Germany, Italy, France, or the Scandinavian countries.

Alternative markets could allow the mechanical engineering and metal working companies to prevent the narrowing its activities in case of rapid market decline. To conduct marketing researches, to set up subsidiaries and to attract innovative technologies and resources could be offered as possible options.

References

Bernstein, L. A. (1993). *Financial statement analysis. Theory, application and interpretation* (5th ed.). Boston: Irwin.

Bragg, S. M. (2007). *Financial analysis: A controller's guide* (2nd ed.). Hoboken: Willey.

Brigham, E. (1989). *Fundamentals of financial management* (5th ed.). Chicago: The Dryen Press.

Brigham, E., & Gapenski, L. (2008). *Intermediate financial management* (4th ed.). Chicago: The Dryden Press.

CSB. (2017). *The total value added by kind of activity NACE Rev. 2.0*. [online]. Accessed April 5, 2017, from http://data.csb.gov.lv/pxweb/lv/rupnbuvn/search/?searchquery=pievienot%u0101s+v%u0113rt%u012bba&rxid=a46565f1-bbb6-4835-a9d1-3dc8a6ad3b2f

CFA Institute. (2008). *Financial statement analysis* (Vol. 3). Chester: Pearson.

Haka, Z. (2016). Jelgava company SFM Latvia in a new factory creation is investing 3 million euros. *Dienas Bizness* [online]. Accessed May 2, 2017, from http://m.db.lv/razosana/jelgavas-uznemums-sfm-latvija-jaunas-rupnicas-izveide-investe-3-miljonus-eiro-446693?from-full

EUROSTAT. (2017a). *Population on 1 January* [online]. Accessed April 14, 2017, from http://ec.europa.eu/eurostat/tgm/table.do?%20tab=%20table&plugin=%201&language=en&pcode=tps00001

EUROSTAT. (2017b). *Manufacture of fabricated metal products statistics* [online]. Accessed April 19, 2017, from http://ec.europa.eu/eurostat/statistics-explained/index.php/Manufacturing_statistics_NACE_Rev._2#Country_analysis

EUROSTAT. (2017c). *Value added of the non-financial business economy by size class of employment* [online]. Accessed August 8, 2017, from https://data.europa.eu/euodp/en/data/dataset/aWokEWRH62VGlRFOzS4Kg

Helfert, E. A. (1996). *Techniques of financial analysis* (8th ed.). Boston: Irwin.

Glen, A. (2013). *Corporate financial management* (5th ed.). Chester: Pearson Education.

Koljcova, I., & Rjabih, D. (2007). *The practice of financial diagnosis and evaluation of projects*. Moscow: Viljams.

Mavlutova, I. (2011). *Business restructuring and company's market value. Scenarios for company's development*. Saarbrucken: LAP LAMBERT Academic Publishing.

Mavlutova, I., Innuse, G., & Ziemele, A. (2017). Improvement opportunities to increase the business efficiency of mechanical engineering and metalworking enterprises in Latvia. In: S. Kapounek & V. Krutilova (Ed.), *20th Annual international conference "enterprise and competitive environment" proceedings*, March 9–10, 2017, Mendel University in Brno, pp. 543–554.

MASOC. (2016). *About the industry* [online]. Accessed 2017 April 24, 2017, from http://www.masoc.lv/nozare/par-nozari

McKinsey & Company. (2015a). *Manufacturing's next act* [online]. Accessed April 29, 2017, from http://www.mckinsey.com/business-functions/operations/our-insights/manufacturings-next-act

McKinsey & Company. (2015b). *Digitizing the value chain* [online]. Accessed April 29, 2017, from http://www.mckinsey.com/business-functions/operations/our-insights/digitizing-the-value-chain

Revsine, L., Collins, D., & Johnson, B. (2011). *Financial reporting and analysis* (5th ed.). Chester: Pearson.

Saksonova, S. (2006). *Practical methods of enterprise financial management*. Riga: Merkurijs Lat.

Savchuk, V. P. (2002). *Financial analysis of the enterprise (international approaches)*. Moskow: Korporativnij menedzement.

Sneidere, R. (2009). *Financial analysis methods for forecasting insolvency of an enterprise*. Riga: Lietiskas informacijas dienests.

The Economist. (2012). *The third industrial revolution* [online]. Accessed July 25, 2017, from http://www.economist.com/node/21553017

Van Horne, J., & Vachowicz, J. (2008). *Fundamentals of financial management* (13th ed.). Harlow: FT Prentice Hall.

A Collaboration Climate and Effectiveness of Knowledge Management

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Abstract This research aims to increase the vision of strategic knowledge management through collaboration in high education institutions. Data was obtained from online MBA students. A total of 165 students from five countries responded to a survey. The technique used was structural equation modeling (SEM). This chapter discusses the concept of collaboration climate in online studies. The results indicate that social interaction (i.e., online collaborative learning) is positively related to knowledge management. Further, the results suggest that knowledge management processes are positively related to collaboration climate. In addition, the effect of online knowledge platform on knowledge generated is positively moderated by knowledge management processes and online collaborative learning. We suggest that online collaborative learning and knowledge management processes are two of the major factors influencing the effectiveness of learning and, in turn, the knowledge generated.

Keywords Collaborative learning · Effectiveness · Knowledge management · Knowledge management processes · Online learning and PLS

1 Introduction

In a knowledge society the changes are produced rapidly; in this context it is vital to learn and update knowledge (Ingleby et al. 2012). The approach chosen to teach and learn is a key question to satisfy the learning requests of students. Such as, new techniques to teach and learn are being established in a more student involved

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method (Hannafin and Land 1997; Zhu and Engels 2014; Besbes 2016). Therefore, students will be able to learn how to discover the knowledge required to resolve main obstacles (McAlpine 2000).

On the other hand, organizations consider teamwork as a key for improving the performance (Curtis and Lawson 2001; Reeves et al. 2004; Davies and Graff 2005; Hall 2005; Sveiby and Simons 2006; Wang et al. 2009; OECD 2016). Consequently, many business-oriented courses request students to work in teams in order to develop certain skills or competences that the undergraduates could need in their professional careers.

In a rapidly changing world more and more connected through ICT, people need to be able to learn new skills for new opportunities to jobs and be always improving their competencies. In this context, online learning constitutes a new social process that is beginning to become the preferred option for students even replacing the distance learning and the traditional face-to-face classes. Online learning is often supported by online knowledge platforms that can provide an extensive collection of resources which are available both for undergraduates and for professors (Nechita and Timofti 2011).

Online collaborative learning is a manner of management the teach and learn process concerning team activities in an online environment (McAlpine 2000). It has a problem-solving center in the context of an online environment. Furthermore, organizations positively value the ability of their workers to collaborate through teamwork (OECD 2016).

Nowadays, knowledge and the capability of creating and utilizing knowledge (i.e., knowledge management) are considered to be the main sources of a business' sustainable competitive advantage (Nonaka 1994; Nonaka and Takeuchi 1995; Spender and Grant 1996; Sveiby 1997; Argote and Ingram 2000; Liao and Wu 2009; Omotayo 2015). Hence, it is interesting to examine and understand the process through which people create and utilize knowledge (Nonaka and Toyama 2003). We should not only consider knowledge as a part of reality. We should consider it as the reality viewed differently depending on the context from which you see it (Nonaka and Toyama 2003). An online knowledge platform could be seen as an enabler of knowledge management processes through online collaborative learning to generate knowledge and improve learning effectiveness.

This chapter examines the relationships among an online knowledge platform, knowledge management processes, online collaborative learning, and learning effectiveness-knowledge generated. How to achieve effectiveness in learning? Can online collaborative learning make learning more effective? Is it possible to generate knowledge through online collaborative learning? This study aims to answer these and other research questions. The proposed hypotheses are tested through an empirical investigation with data of 165 students from five different countries of Master of Business Administration (MBA) in a Spanish university.

The rest of the chapter is organized as follows. Section 2 presents a review of the literature and proposes the hypotheses. Section 3 describes the research methodology and the data analysis. Section 4 reports the results and discussion. Finally, Sect. 5 presents the conclusions, limitations, and managerial implications.

2 Literature Review and Hypotheses

2.1 Online Knowledge Platform

The rapid development of technology has enabled online education in different areas of knowledge. Actually, it is recognized to be popular among undergraduates for different reasons. As a result, many universities in the world offer online studies which give students the opportunity to access higher education anywhere in the world (Wright 2015).

Online knowledge platforms allow students to communicate verbally, interchange text messages, upload presentations, transfer video and more (McBrien et al. 2009). Online knowledge platforms should not be seen only as knowledge repositories for the students but also as an effective knowledge management tool (Wild et al. 2006). Therefore, knowledge management processes have a key role for this knowledge to be useful (Ardichvili et al. 2006). One of the main benefits of online knowledge platforms is the flexibility in the way students can participate.

2.2 Online Collaborative Learning

Online collaborative learning is an methodology to teach and learn in which undergraduates are necessary to teamwork in the knowledge process in a context of an online environment in order to accomplish group tasks (Bruffee 1993; Dillenbourg et al. 2007). Previous studies have recommended that collaboration in online learning courses encourages student-centered learning. Students' involvement may be less intimidating, and quantity and quality of participation may be increased in online classes (Smith and Hardaker 2000; Roberts and McInnerney 2007; Ni 2013; Jie et al. 2017).

Wild et al. (2002) consider online learning as a tool for knowledge management. In an online collaborative learning context, knowledge is shared between students as they effort toward common learning aims. Hence, online collaborative learning assists undergraduates to improve advanced order thinking skills and to acquire knowledge through common objectives and shared exploration (Palloff and Pratt 1999; McAlpine 2000; Curtis and Lawson 2001; Davies and Graff 2005; Garcia and Badia 2017). Besides, online collaborative learning has many benefits in terms of feedbacks are also used to improve collaborative learning (Su et al. 2010).

2.3 Knowledge Management Processes

The challenges of implementing online knowledge platforms mirror those of conducting knowledge management and involve the development of a technical

infrastructure, and the design of a knowledge strategy (Mackay and Burt 2015), to name a few (Wild et al. 2006). The management and processing of organizational knowledge are increasingly being viewed as critical to organizational and personal success (Inkpen and Dinur 1998). We posit that online knowledge platform is a dynamic system of processes involving different kinds of knowledge. Some researchers have been drawn about the benefits of knowledge-based resources and knowledge creation. Nevertheless, more efforts are needed to found how students obtain new knowledge through online knowledge platforms. These considerations lead us to propose the first and second hypotheses of our research:

H1: Online knowledge platform has a positive influence on knowledge management processes.

H2: Online knowledge platform has a positive influence on online collaborative learning.

2.4 Learning Effectiveness-Knowledge Generated

Learning effectiveness means that students who complete an online training obtain learning that represents the characteristic excellence of the institution. Our aim is to validate that online learning is at least similar to the learning through other institution's delivery modes such as the traditional face-to-face, classroom-centered instruction (Neuhauser 2002; Swan 2003). Collaboration is key in an online collaborative learning. A win–win approach will induce learning effectiveness and the generation of knowledge (Richmond et al. 1987; Rovai and Barnum 2003; Xing et al. 2015).

Hence, we suggest the following hypotheses:

H3: Online knowledge platform positively influences learning effectiveness-knowledge generated.

H4: Knowledge management processes have a positive influence on learning effectiveness-knowledge generated.
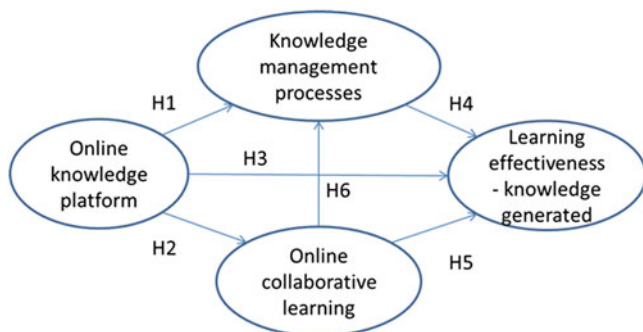

Fig. 1 Theoretical model. Source: Developed by the authors

H5: Online collaborative learning positively influences learning effectiveness-knowledge generated.

H6: Online collaborative learning has a positive influence on knowledge management processes. This study represents above relationships in the proposed research model shown in Fig. 1.

3 Methodology

3.1 Data Collection

The context of a high education institution constitutes a suitable one to test empirically our research hypotheses due to the collaborative activities and the knowledge management processes involved in it. The unit of analysis is MBA students from five countries who had attended at least one year of class at the Spanish university concerned. Data were collected over a period of two months, from April 2016 to May 2016. Four hundred students were contacted to participate in the research. The process yields a total of 165 questionnaires. Hence, the response rate was 41.25%.

3.2 Measures

This study used a survey to collect data on a 10-point Likert scale.

The online collaborative learning scale was constructed from a literature review. An expert panel helped to identify the correct items for these constructs. These scales consist of 25 items.

According to Henseler (2017), we measured our latent variables as composites. All constructs in our study were considered Mode A composites.

3.3 Data Analysis

Partial least squares (PLS-SEM) with SmartPLS v. 3.2.4. (Ringle et al. 2015) was used to test our proposed hypotheses simultaneously (Richter et al. 2016). We have considered all measures as composites. Therefore, PLS-SEM was the data analysis technique used to test our model. It implies that the total variance of all constructs is used to estimate model parameters of the model (Joseph F. Hair et al. 2017).

Consistent with the recent advances of PLS-SEM reporting, the following steps were followed (Henseler et al. 2016; Joseph F. Hair et al. 2017). Firstly, we test the model fit. We report the standardized root mean square residual (SRMR) as a measure of approximate fit (Henseler et al. 2014). The SRMR of well-fitting models

should not exceed a value of 0.08 (Hu and Bentler 1999; Henseler et al. 2016; Hair et al. 2017).

Secondly, the assessment of the measurement model was performed using the confirmatory composite analysis by analysing the fit model of the saturated model (Henseler et al. 2016; Henseler 2017). Model composites reliability has been proven through ρA (Henseler et al. 2016). ρA is considered to be an appropriate measure of internal consistency reliability. Reliability values of 0.7 indicate proper reliability in the early phases of study. In more advanced phases, values of 0.8 or 0.9 should be used (Nunnally 1978). The average variance extracted (AVE) was used as a measure of unidimensionality (Fornell and Larcker 1981). A heterotrait-monotrait ratio of correlations (HTMT) was used to test discriminant validity (Henseler et al. 2015).

Finally, we carry out the assessment of the structural model through the analysis of the path coefficients. Bootstrap percentile confidence intervals of the path coefficients help in the generalization from the sample to the population.

4 Results

The SRMR value for the saturated model is 0.078. Hence, our proposed model has a good fit. As it has been already commented, we have followed two steps in the analysis and interpretation of the PLS-SEM estimations: (1) the assessment of the reliability and validity of the measurement model; and (2) the examination of the measurement model.

4.1 Measurement Model

The measurement model meets all commonly stipulated requirements. First, the quality of the measurement model has been proven as the SRMR of the saturated model (SRMR = 0.078).

Second, all standardized loadings are greater than 0.7, being individual items reliable. Third, due to all Dijkstra and Henseler's ρ exceed the value of 0.8 (Table 1), the model satisfies the prerequisite of construct reliability. The scores for the AVE also exceed the value of 0.5 (Table 1) for composites' unidimensionality, and all HTMT are below 0.85. Therefore, convergent validity and discriminant validity are confirmed (Table 1).

4.2 Structural Model

According to Henseler et al. (2009), bootstrapping (5000 resamples) was used to produce bootstrap confidence intervals of standardized regression coefficients.

Table 1 Reliability, convergent validity, and discriminant validity values of the measurement model

Construct	rho_A (ρ)	Composite reliability	AVE	HTMT (OCL)	(OKP)	(LE)	(KMP)
Online collaborative learning (OCL)	0.900	0.924	0,709				
Online knowledge platform (OKP)	0.880	0.889	0.618	0.578			
Learning effectiveness (LE)	0.887	0.930	0.815	0.837	0.635		
Knowledge management processes (KMP)	0.943	0.947	0.620	0.715	0.790	0.750	

Source: Authors' own calculations

Table 2 Construct effects on endogenous variables (including lower and upper bounds of 95% confidence interval)

Hypotheses	Path Coef.	Confidence intervals 95%CI$_{li}$	95%CI$_{hi}$	Supported
H1: OKP → KMP	0.529	0.380	0.648	Yes
H2: OKP → OCL	0.532	0.363	0.681	Yes
H3: OKP → LE	0.087	−0.071	0.244	Yes
H4: KMP → LE	0.284	0.076	0.515	Yes
H5: OCL → LE	0.516	0.318	0.682	Yes
H6: OCL → KMP	0.386	0.264	0.532	Yes

Source: Authors' own calculations

According to Hayes and Scharkow (2013), bootstrap confidence intervals constitute a good approach for the analysis of path coefficients. All the path coefficients are supported (Table 2).

Our research model explains the 63.4% of the variance in learning effectiveness-knowledge generated (R^2).

5 Conclusion

This research shows the importance of online knowledge platforms and the connection with knowledge management processes, online collaborative learning, and learning effectiveness. This study was based on 165 students' answers from five countries.

The results show that an online knowledge platform is significant to learning effectiveness, acting knowledge management processes, and online collaborative learning as mediators to achieve such learning effectiveness. Therefore, the connection between online knowledge platform and learning effectiveness is not direct.

That constitutes an important finding, both theoretical and practical, because online collaborative learning and knowledge management processes are necessary in order to generate knowledge and increase effective learning.

This study has some limitations. A descriptive study of the sample could be performed. It would also be interesting to conduct a study over time with the same sample. On the other hand, these limitations are opportunities for future lines of research.

The main managerial implication is that by online collaborative learning and knowledge management processes will lead to learning effectiveness. This is an interesting point for professors, professionals and students.

References

Ardichvili, A., et al. (2006). Cultural influences on knowledge sharing through online communities of practice. *Journal of Knowledge Management, 10*(1), 94–107. https://doi.org/10.1108/13673270610650139.

Argote, L., & Ingram, P. (2000). Knowledge transfer: A basis for competitive advantage in firms. *Organizational Behavior and Human Decision Processes, 82*(1), 150–169. https://doi.org/10.1006/obhd.2000.2893.

Besbes, R. (2016). Learning effectiveness enhancement project "LEEP". In J. Zhang et al. (Eds.), *ICT in education in global context: The best practices in K-12 schools* (pp. 71–82). Springer: Singapore. https://doi.org/10.1007/978-981-10-0373-8_5.

Bruffee, K. A. (1993). *Collaborative learning: Higher education, interdependence, and the authority of knowledge*. Baltimore, MD: Johns Hopkins University Press.

Curtis, D. D., & Lawson, M. J. (2001). Exploring collaborative online learning. *Journal of Asynchronous Learning Networks, 5*(1), 21–34.

Davies, J., & Graff, M. (2005). Performance in e-learning: Online participation and student grades. *British Journal of Educational Technology, 36*(4), 657–663.

Dillenbourg, P., Baker, M. J., & Malley, C. O. (2007). The evolution of research on collaborative learning.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50.

Garcia, C., & Badia, A. (2017, February). Information problem-solving skills in small virtual groups and learning outcomes. *Journal of Computer Assisted Learning*, *33*(4), 382–392. https://doi.org/10.1111/jcal.12187.

Hair, J. F., et al. (2017). Mirror, mirror on the wall: A comparative evaluation of composite-based structural equation modeling methods. *Journal of the Academy of Marketing Science, 45*(5), 616–632. https://doi.org/10.1007/s11747-017-0517-x.

Hall, P. (2005). Interprofessional teamwork: Professional cultures as barriers. *Journal of Interprofessional Care, 19*(sup1), 188–196. https://doi.org/10.1080/13561820500081745.

Hannafin, M. J., & Land, S. M. (1997). The foundations and assumptions of technology-enhanced student-centered learning environments. *Instructional Science, 25*(3), 167–202. https://doi.org/10.1023/A:1002997414652.

Hayes, A. F., & Scharkow, M. (2013). The relative trustworthiness of inferential tests of the indirect effect in statistical mediation analysis: Does method really matter? *Psychological Science, 24*(10), 1918–1927. https://doi.org/10.1177/0956797613480187.

Henseler, J. (2017). Bridging design and behavioral research with variance-based structural equation modeling. *Journal of Advertising, 46*(1), 178–192. https://doi.org/10.1080/00913367.2017.1281780.

Henseler, J., Ringle, C., & Sinkovics, R. (2009). The use of partial least squares path modeling in international marketing. In C. M. Ringle, R. R. Sinkovics, & P. N. Ghauri (Eds.), *New Challenges to International Marketing* (Vol. 20, pp. 277–319). Emerald Group Publishing Limited. https://doi.org/10.1108/S1474-7979(2009)0000020014.

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management & Data Systems, 116*(1), 2–20. https://doi.org/10.1108/IMDS-09-2015-0382.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8.

Henseler, J., et al. (2014). Common beliefs and reality about PLS. *Organizational Research Methods, 17*(2), 182–209. https://doi.org/10.1177/1094428114526928.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1–55. https://doi.org/10.1080/10705519909540118.

Ingleby, E., et al. (2012) *Research methods in education*, *professional development in education*. https://doi.org/10.1111/j.1467-8527.2007.00388_4.x.

Inkpen, A. C., & Dinur, A. (1998). Knowledge management processes and international joint ventures. *Organization Science, 9*(4), 454–468. https://doi.org/10.1287/orsc.9.4.454.

Jie, H., Johri, A., & Lohani, V. (2017). Computers & education analytics and patterns of knowledge creation: Experts at work in an online engineering community. *Computers & Education, 112*, 18–36. https://doi.org/10.1016/j.compedu.2017.04.011.

Liao, S.-H., & Wu, C. (2009). System perspective of knowledge management, organizational learning, and organizational innovation. *Expert Systems with Applications, 37*(2), 1–8. https://doi.org/10.1016/j.eswa.2009.06.109.

Mackay, D., & Burt, G. (2015). Strategic learning, foresight and hyperopia. *Management Learning, 46*(5), 546–564. https://doi.org/10.1177/1350507614549120.

McAlpine, I. (2000). Collaborative learning online. *Distance Education, 21*(1), 66–80. https://doi.org/10.1080/0158791000210105.

McBrien, J. L., Jones, P., & Cheng, R. (2009). Virtual spaces: Employing a synchronous online classroom to facilitate student engagement in online learning. *International Review of Research in Open and Distance Learning, 10*(3), 1–17. https://doi.org/10.19173/irrodl.v10i3.605.

Nechita, E., & Timofti, I. C. (2011). Increasing independence versus increasing collaboration with ICT support. *Procedia – Social and Behavioral Sciences, 29*, 1508–1517. https://doi.org/10.1016/j.sbspro.2011.11.391.

Neuhauser, C. (2002). Learning style and effectiveness of online and face-to-face instruction. *American Journal of Distance Education, 16*(2), 99–113. https://doi.org/10.1207/S15389286AJDE1602_4.

Ni, A. Y. (2013). Comparing the effectiveness of classroom and online learning: Teaching research methods. *Journal of Public Affairs Education, 19*(2), 199–215. https://doi.org/10.1080/15236803.2013.12001730.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science, 5*(1), 14–37. https://doi.org/10.1287/orsc.5.1.14.

Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford: Oxford University Press.

Nonaka, I., & Toyama, R. (2003). The knowledge-creating theory revisited: Knowledge creation as a synthesizing process. *Knowledge Management Research & Practice, 1*, 2–10. https://doi.org/10.1057/palgrave.kmrp.8500001.

Nunnally, J. (1978). *Psychometric theory*. New York: McGraw-Hill.

OECD. (2016). *PISA 2015 assessment and analytical framework: Science, reading, mathematic and financial literacy*. Paris: OECD Publishing.

Omotayo, F. O. (2015). Knowledge management as an important tool in organisational management: A review of literature. *Library Philosophy and Practice (e-Journal)., 1238*, 1–23.

Palloff, R., & Pratt, K. (1999). *Building learning communities in cyberspace: Effective strategies for the online classroom*. San Francisco, CA: Jossey-Bass.

Reeves, T. C., Herrington, J., & Oliver, R. (2004). A Development Research Agenda for Online Collaborative Learning. *Educational Technology Research and Development, 52*(4), 53–65.

Richmond, V. P., Gorham, J. S., & Mccroskey, J. C. (1987). The relationship between selected immediacy behaviors and cognitive learning. *Annals of the International Communication Association, 10*(1), 574–590. https://doi.org/10.1080/23808985.1987.11678663.

Richter, N. F., et al. (2016). European management research using partial least squares structural equation modeling (PLS-SEM). *European Management Journal, 34*(6), 589–597. https://doi.org/10.1016/j.emj.2016.08.001.

Ringle, C. M., Wende, S., & Becker, J.-M. (2015). *SmartPLS 3*. Boenningstedt: SmartPLS GmbH. Available from http://www.smartpls.com

Roberts, T. S., & McInnerney, J. M. (2007). Seven problems of online group learning (and their solutions). *Educational Technology and Society, 10*(4), 257–268. https://doi.org/10.1111/j.2151-6952.1960.tb01699.x.

Rovai, A. P., & Barnum, K. T. (2003). On-line course effectiveness: An analysis of student interactions and perceptions of learning. *Journal of Distance Education, 18*(1), 57–73.

Smith, D., & Hardaker, G. (2000). e-Learning innovation through the implementation of an internet supported learning environment. *Journal of Educational Technology & Society, 3*(3), 422–432.

Spender, J. C., & Grant, R. M. (1996). Knowledge and the firm: Overview. *Strategic Management Journal, 17*(S2), 5–9. https://doi.org/10.1002/smj.4250171103.

Su, A. Y. S., et al. (2010). A Web 2.0-based collaborative annotation system for enhancing knowledge sharing in collaborative learning environments. *Computers & Education, 55*(2), 752–766. https://doi.org/10.1016/j.compedu.2010.03.008.

Sveiby, K. E. (1997). *The new organizational wealth*. San Francisco: Berrett-Koehler.

Sveiby, K. E., & Simons, R. (2006). Collaborative climate and effectiveness of knowledge work ± an empirical study. https://doi.org/10.1108/13673270210450388

Swan, K. (2003). Learning effectiveness online: What the research tells us. *Elements of Quality Online Education, Practice and Direction*, 13–45. https://doi.org/10.1111/j.1467-8535.2005.00519.x

Wang, L., et al. (2009). Assessing teamwork and collaboration in high school students. *Canadian Journal of School Psychology, 24*(2), 108–124. https://doi.org/10.1177/0829573509335470.

Wild, R., Griggs, K., & Downing, T. (2002). A framework for e-learning as a tool for knowledge management. *Industrial Management & Data Systems, 102*(7), 371–380.

Wild, R. H., et al. (2006). A framework for e-learning as a tool for knowledge management. https://doi.org/10.1108/02635570210439463

Wright, R. (2015) *Student-teacher interaction in online learning environments*. In: R. D. Wright (Ed.), IGI Global (Advances in Educational Technologies and Instructional Design). https://doi.org/10.4018/978-1-4666-6461-6

Xing, W., et al. (2015). Group learning assessment: Developing a theory-informed analytics. *Journal of Educational Technology & Society, 18*(2), 110–128. https://doi.org/10.1016/j.chb.2014.09.034.

Zhu, C., & Engels, N. (2014). Organizational culture and instructional innovations in higher education: Perceptions and reactions of teachers and students. *Educational Management Administration & Leadership, 42*(1), 136–158. https://doi.org/10.1177/1741143213499253.

Supply Chain Governance Mechanisms: A Review and Typology

Urszula Ryciuk

Abstract In times of globalization and turbulence of the environment, even large companies are forced to develop their competitiveness by creating different types of relations with other entities. The crucial issue in supply chain management is finding a governance mechanism that fosters achieving the greatest possible supply chain performance. However, supply chain governance concept is quite new, not well recognized in the literature. In the chapter issue of supply chain governance mechanisms was presented and discussed. The aim of the chapter was to develop the typology of governance mechanisms in the supply chains as well as to analyse the state of research on the issue of supply chain governance and to identify the main research areas related to this subject. The chapter was based on literature review. The analysis included articles available in the EBSCO, Elsevier, and Emerald databases from 1990 to 2017. The chapter also includes a bibliometric analysis of the articles. The results of the study show that the main distinction of supply chain governance is between market, hierarchical, and relational governance. Other typologies could distinguish formal and informal governance, dyadic and network governance, imposed and self-forcing governance or single and plural governance. The main research topic concerns the choice of the appropriate supply chain governance mechanism (or set of mechanisms) and its impact on supply chain performance or other constructs like innovativeness.

Keywords Supply chain governance · Supply chain performance

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1   Introduction

Supply chain is at least two entities involved in delivering products or services to a customer. Between entities, upstream and downstream the supply chain, there are direct flows of products, services, finances, and accompanying information (Mentzer et al. 2001). Partners in the supply chain share relevant information and make joint decisions for effective and efficient management of material, financial, information, and knowledge flows. Successful supply chain management (SCM) requires individual companies no longer compete as solely autonomous entities but as supply chains (network of multiple member businesses and relationships between them)—it is the era of internetwork competition (Lambert and Cooper 2000). In particular, achieving the benefits of cooperation in the supply chain is possible thanks to the integration and coordination of business processes that contribute to the optimization of the value added by all chain members to the product expected by the customer. Integration in the supply chain is the degree to which an enterprise realizes goals strategically with partners in the supply chain and jointly manages intraorganizational and interorganizational processes to achieve efficient and effective flows and provide maximum value to customers at the lowest possible cost (Zhao et al. 2008).

Nowadays, main and the most crucial aspect of supply chain management seems supply chain relationship management. Supply chain management is even defined as a new way of managing business and relationships with other members of the supply chain (Lambert and Cooper 2000; Jüttner et al. 2007). Next to a functional or process approach to supply chain management, in recent years collaboration school emerged—a new school of thought pertaining to SCM concentrated on collaboration as main element of adequate supply chain management (Crişan 2016). One of the key issues in supply chain management is finding a governance mechanism that fosters achieving the greatest possible supply chain performance. Supply chain governance (SCG) signifies all activities initiated to manage relationships within a supply chain and relates to a set of activities which are commenced with the aim to achieve lasting and profit bearing balance of business and authority (Nooteboom 1999). Nowadays, the management paradox could be observed—rising environmental turbulence, the increased globalization and the global competition requires the closeness of the relationships and collaboration as well as the simultaneous need for control because of risk of opportunism present in every exchange.

In the chapter issue of supply chain governance was presented and discussed. The aim of the chapter was to develop the typology of governance mechanisms in the supply chains as well as to analyse the state of research on the issue of supply chain governance and to identify the main research areas related to this subject. The chapter was based on a literature review. The analysis included articles available in the EBSCO, Elsevier, and Emerald databases from 1990 to 2017. The chapter also includes a bibliometric analysis of the articles.

The results of the study show that the main distinction of supply chain governance is between market, hierarchical, and relational governance. Other typologies

could distinguish formal and informal governance, dyadic and network governance, imposed and self-forcing governance or single and plural governance. The main research topic concerns the choice of the appropriate supply chain governance mechanism (or set of mechanisms) and its impact on supply chain performance or other constructs like innovativeness.

2 Supply Chain Governance

Governance is a multidimensional phenomenon involving the initiation, development, and maintenance of relationships between parties (Heide 1994). Supply chain governance is coordination of the authority and power relationships that determine how financial, material, and human resources are allocated within and flow within a chain (Gellynck and Molnár 2009). The term expresses that there are various interests in relationship and the real challenge is to achieve balance of interests and power in order to regulate all relations extending boundaries of organization. It includes the concept of control but is wider than control (Heide 1994). It is also not decision-making, and it is not management, but is the framework wherever decision-making is made (Crişan et al. 2011). The act of governance is related to power that influences what rules, structures, and institutions regulate and control the supply chain (Crişan 2016). Between firms, power can be defined as the capability of one firm to influence the actions and the decisions of another entity. Governance is the idea of making use of power, but main subject is to the overarch goal of coordinating the efforts of chain partners (Heide 1994).

Supply chain governance signifies all activities initiated to manage relationships within a supply chain—it refers to the rules, structures, and institutions created for guidance, control, and management of supply chain relations, providing the framework within which supply chain transactions are negotiated and executed. The term covers planned and conscious activities initiated by entities as well as unplanned elements emerging as the result of cooperation (Varoutsa and Scapens 2015). It can refer to the relationships between two entities within the supply chain as well as of the entire supply chain understand as extended enterprise. Certain frameworks/structures within which interorganizational relationships are initiated, built, developed, and monitored may also be included as part of governance. Mechanisms of governance may encompass contracts, standards, reporting mechanisms, social bonds, ethical norms, trust etc.

Supply chain management is a superior system to supply chain governance (Crişan et al. 2011). If SCM refers to the operational side of a supply chain, then SCG is superior integrative system for the coordination of operations, if SCM refers to the strategic coordination of partners' actions, SCG is superior system which ensures the implementation and the control of actions. Governance in the supply chain is the result of intentional actions undertaken by the parties and mechanisms often independent of the parties, e.g., resulting from functioning in a specific economic or legal environment. Other governance mechanisms are observed in the

case of companies which have been cooperating for a long time, others for companies just starting cooperation (Ryciuk 2017). Moreover, governance of one relationship is dependent on the whole network of relationships in which the company is involved (Sharma 1998).

3   Research Methodology

Supply chain governance mechanisms are all practices used by supply chain members to manage relationships with their suppliers and/or clients with the aim of achieving the assumed goals, especially improving supply chain performance. Supply chain performance is considered at the strategic, tactical, or operational level (Gunasekaran et al. 2004), concern basic elements such as: costs, time, or quality (Toni and Tonchia 2001) and more difficult to interpret and measure: innovativeness, flexibility, reliability (Simatupang and Sridharan 2008), agility (Narayanan et al. 2015) or sustainability. Performance measures can be seen as a "vehicle to govern the supply chain across the parties" (Beamon 1999, p. 278).

Supply chain relations do not have to be limited to clear collaboration or classic competition and one of the key issues is finding a governance mechanism or set of mechanisms that leads to transaction costs reduction, knowledge exchange and mutual learning and that foster achieving the greatest possible supply chain performance and consequently competitiveness improvement.

Governance mechanisms differ from each other because of its formality, duration, resource allocation, and way of monitoring (Martins et al. 2017). The question is what governance structure and governance mechanisms could be identified, are governance mechanism complement or substitutes, is it possible to use only one governance system in all supply chain relationships and during whole cooperation, what other research areas related to the issue of supply chain governance are important and worth considering.

Supply chain governance mechanisms review and typology was made on the basis of the literature review. In the study journal articles from the years 1990–2017 available in the EBSCO, Elsevier, and Emerald databases were used. The articles containing terms "governance" and "supply chain" in title, abstract, or keywords were selected (Table 1).

Table 1   The steps of creating the literature database

Searching criteria	EBSCO	Elsevier	Emerald
Governance OR supply chain in title, abstract or keywords	29,358	14,447	16,522
Governance AND supply chain in title, abstract or keywords	25	212	20
Journal publication (books, reference work etc. excluded) from 1990 to 2017	18	189	20
After abstracts, titles and keywords verification	11	29	9

Source: Author's own study

The chapter presents also a bibliometric analysis of journal articles. The bibliometric analysis was based on keywords occurrence—an analysis of keywords coexistence was presented and discussed. The purpose of the analysis was to identify research areas related to the issue of supply chain governance.

4   Supply Chain Governance: Bibliometric Analysis

The aim of the chapter was the analysis of the state of research on the issue of supply chain governance and identification of the main research areas related to this subject. For that purpose, frequency analysis of keywords occurrence in analysed journals was conducted. Keywords analysis was made on the basis on the created word cloud (Fig. 1). Considering the most frequently repeated keywords, it can be stated that the issue of supply chain governance is related to supply chain management, supply chain performance assessment, supply chain innovativeness, sustainable development, and relationship management in the supply chain.

The main research topic concerns the analysis of the impact of governance mechanisms on supply chain performance. In general, the impact of transactional mechanisms on the results of the supply chain is better recognized in the literature than the influence of relational mechanisms. The existence of relational mechanisms is, however, indicated as crucial in achieving competitive advantage and maintaining relationships with partners in the supply chain (Cheng et al. 2014; Hammervoll 2011). Prevalence of relational mechanisms within a supply chain pertains to chains which are more mature and characterized by partnership relationship existence

Fig. 1 Supply chain governance—word cloud. Source: Authors' own study

(Varoutsa and Scapens 2015). The latest research concerns the occurrence of specific governance mechanisms depending on the relationship maturity stage, as well as the assessment of making mutual efforts to develop cooperation. The impact of relational and transactional mechanisms on information exchange and creation of value within the supply chain is also considered. Supply chain results are also analysed from the point of view of costs, quality of delivered goods, and final customer satisfaction (Vlachos 2014). The research concern the choice of the appropriate supply chain governance mechanism and impact of the choice made on innovativeness and the costs of performance (results of supply chain operations in terms of cost) (Blome et al. 2013).

The research also refer to the determinants of the development of specific governance mechanisms and the indirect impact of governance on supply chain performance, e.g., the impact of selected mechanisms on the scope of information exchange and indirectly on the supply chain performance (Gosh and Fedorowicz 2008; Hammervoll 2011). There are also examples or case studies describing the development of governance in time (Halldórsson and Skjøtt-Larsen 2006). Another group of publications concerns the presentation of the theoretical models of supply chain governance (Crişan et al. 2011). The concept is understood as the multidimensional theoretical construct (Jain and Dubey 2005), in which measurement can be made considering different elements (indicators).

Part of the research includes a narrow perspective—individual organizations and the governance mechanisms used in relations with the closest partners as well as impact of dyadic governance on the entire supply chain (Veen-Dirks and Verdaasdonk 2009). The research area mentioned above concerns usually leading companies with the highest bargaining power in the supply chain (Hammervoll 2011).

Some of the studies go beyond the supply chains and cover a wider perspective— economic, political but mainly the influence of supply chains on environment. An important area of research is complicated dependencies between the occurrence of specific governance mechanisms, the structure/complexity of the supply chain and the management of green supply chains, sustainable supply chains or activities undertaken within the framework of corporate social responsibility (Tachizawa and Wong 2015; Gimenez and Sierra 2013; Soundararajan and Brown 2016). The subject matter is also the impact of governance mechanisms on reverse logistics and support for the processes of materials and information flow management upstream the supply chain (Aitken and Harrison 2013).

Supply chain governance mechanisms are identified differently depending on governance structure division. Main distinction is between market, hierarchical, and relational governance. Other typologies could distinguish formal and informal governance, dyadic and network governance or imposed and self-forcing governance. The typologies are not disjoint and the same mechanisms could be identified in relational, informal, and self-forcing governance or in imposed, formal, and hierarchical governance.

5 Market, Hierarchical, and Relational Governance

The elementary theory within which the mechanisms of governance are being examined is the transaction costs theory (Williamson 1979, 1991). According to this theory it is possible to mainly distinguish transactions organized by the market and transactions in which the relationships between partners are hierarchic. To simplify, the main assumption of transaction cost economics (TCE) is the opportunism of enterprises as well as contracts or hierarchy as solutions limiting the likelihood of the occurrence of opportunistic behavior. Relating the assumptions of TCE to the development of supply chains at early stages of cooperation the relationships of enterprises mainly consist of arm's length market relationships characterized by being aimed at achieving personal gains, taking advantage of the chain's bargaining power, and the realization of short-term goals. Cooperation exists only in a very limited scope—it is a form of market governance (Crişan 2012) between unrelated, equal entities, where price is the main determining factor in choosing to cooperate with this particular partner. Governance is imposed by the threat of enforcement of legal contracts and price mechanism is dominant (Hammervoll 2011).

Another extreme form of cooperation is a system modeled on hierarchical governance involving the existence of asymmetric relationships within the supply chain as well as basing the cooperation on detailed contracts, procedures, standards, and decision-making by only one entity whose interests are imperative. In hierarchical governance, leading and decision-making party is provided with a detailed contractual arrangement between the parties and system of different encouragements, rewards, and penalties (Hammervoll 2011). In a supply chain, hierarchy may be the last phase in the development of supply chain relationship—an event where the integration processes occur as a result of appropriation of control over subsequent links of the supply chain by one entity on the road to changing ownership (complete ownership at the end)—sometimes called ownership governance (Rinehart et al. 2004).

Between cooperation based on transactional mechanisms and hierarchic solutions there are hybrid, intermediate forms of cooperation positioned between market transactions and vertical integration which contain attributes related to competition as well as to cooperation (Ploetner and Ehret 2006). Hybrid, e.g., franchising, partnership, alliance, joint venture and hybrid governance is the systemic, strategic coordination of business structures and processes between supply chain members the main aim of which is the improvement of the efficiency and effectiveness of the individual companies and the whole supply chain (McCarthy-Byrne and Mentzer 2011). Hybrids are forms where parties remain autonomous but are engaged in mutual aim realization. Intermediate solutions may concern situations where one entity has greater authority and, in the future, may lead to the development of hierarchic solutions or the end of cooperation. Business practice shows, however, that during cooperation economic entities are not always solely motivated by profits and the search for personal gains. Opportunism assumed in TCE is therefore not the only possible attitude. The development of cooperation within a supply chain trough

repeated transactions gradually leads to the establishment of relationships based on short-term contracts and, if the cooperation is successful, then this relationship may evolve into a long-term partnership founded on loyalty and trust. The fear of tarnishing one's reputation, avoidance of the termination of a long-term relationship, the perspective for future cooperation as well as relational norms may all be forms of insurance from defaulting on a contract (relational governance).

Gosh and Fedorowicz (2008) point trust, power, and contracts as relational supply chain governance mechanisms used to support decisions and management of supply chain operations. According to Wacker et al. (2016) two primary hybrid governance structures are contractual governance and relational adaptation. Among relational mechanisms values, social structures, information sharing (Pilbeam et al. 2012), relationship learning (Jean et al. 2010), relational norms/social norms (mutuality, flexibility, solidarity), common goals, joint problem solving, restraint of power, social embeddedness, loyalty and trust could be identified. Other relational factors include mutual understanding and commitment (Sharma 1998).

6   Formal and Informal Governance

The formal governance of supply chain relationships relies on the use of hard, explicit, formal, and written contract established after negotiations with regard to all responsibilities and obligations of suppliers and customers (Blome et al. 2013). The extent to which detailed and binding contractual agreement is used to specify the roles and obligations of the parties is called contractual governance (Cannon et al. 2000). The more complex the contract, the greater the number of clauses, obligations, and penalties, the higher is formalization and consequently higher cost of contract compilation and monitoring (Carey and Lawson 2011).

In a wider sense, formal governance can take the form of control and reporting systems through which organizations structure their interaction in an explicit way (Alvarez et al. 2010). Formal governance refers to the institutional mechanisms by means of which the decision-making is regulated and the activities on the chain are carried out. Governance mechanisms can include "incentive systems, standard procedures and documented dispute resolution procedures" (Alvarez et al. 2010, p. 166) and are often based on hierarchical control. Other mechanisms are standards, formal structures (Pilbeam et al. 2012), formalized processes, and control systems such as audits (Tachizawa and Wong 2015).

The content of the contract, rules, and conditions that the others supply chain members are expected to follow are usually set by focal, leading company. Leading company sets the rules and conditions and/or incentives in the form of punishments and awards to suppliers—all to ensure obtaining the assumed benefits (Dolci and Maçada 2014). Formalized cooperation, based on standards, procedures, and in-depth contracts solutions, is more typical for large, powerful companies and new relationships (Ryciuk 2017). The main disadvantage of contractual agreements is that contracts, as never comprehensive and complete, are not always sufficient to

achieve successful cooperation. Supply chain members never have complete information about all the precontract conditions, what forces entities to modify contract after its signing (Wacker et al. 2016).

Supply chain governance can also be based on informal mechanisms. "Reliance on the informal agreements to govern relationship in the aspects of role specification, planning, adjustment processes, monitoring procedures, incentive systems, and means of enforcement" is normative contract (Heide 1994). Normative contract provides a general frame of reference and standards against which to guide and assess appropriate behavior in uncertain and ambiguous situations. Informal governance is usually the result of long-term exchange and satisfactory relationships. In relational exchange the historical and social context in which transactions take place are important and enforcement of obligations following from the mutuality of interest that exists between a set of parties (Heide 1994). Informal governance is defined as structural arrangements designed to influence the behavior of organization members based on social control and trust rather than bureaucratic structures (Tachizawa and Wong 2014). According to some research, relational/informal mechanisms outperform formal mechanisms in terms to administrative costs (relating to hierarchies) and transaction costs (characteristic for markets) (Jain and Dubey 2005). Among informal governance mechanisms are norms such as: mutuality, flexibility, solidarity and information sharing (Carey and Lawson 2011) or informal cultures and social bonds between participants (Alvarez et al. 2010). Informal governance is more typical of established, long-lasting relationships (Ryciuk 2017).

The division is equivalent with classification on transactional and relational governance. Transactional governance centers on formal mechanisms and appeal to transaction cost economics while relational governance is based on informal mechanisms such as trust, reciprocity or the social embeddedness (Bouncken et al. 2016).

7 Imposed and Self-Forcing Governance

The division on imposed and self-forcing governance is based on the way obligations are introduced and implemented on the parties. Imposed governance is enforced by a focal, leading, power possessing and decision-making organization imposing terms of cooperation. Imposed governance could be enforced by formal mechanisms introduction. Tachizawa and Wong (2014) identified also in practices used by lead firms to manage multitier relationships with suppliers: collaboration or delegation of responsibilities to third-party organizations (e.g., NGOs, competitors, firms from the same industry, standards institutions, etc.) or indirect governance—an approach in which the leading company influences lower-tier suppliers indirectly through another supplier, e.g., leading company uses power over first-tier suppliers to enforce on them monitoring or collaboration with lower-tier suppliers.

Third-party governance is governance by neutral third party that coordinates the entire supply chain and aligns the incentives for all the participating players. The

coordinator can be either a trading firm or a logistics service provider, e.g., 4PL (Lu et al. 2010). According to Lu et al. (2010) a third-party governance could be a solution for fairly distribution of benefits in supply chain, especially in consideration of small and weaker suppliers. The authors note though that supply chains that are fully governed by third parties are the exception rather than the norm and that a third-party coordinator is possibly needed only in case of supply chains characterized by a low intensity of interaction and when the knowledge exchanged is mainly low-tech with no danger of leakage.

Self-enforcement governance is based on self-enforcing mechanisms like trust, commitment, and mutual interests and develops when partners feel mutually and morally dependent (Bouncken et al. 2016). According to Jean et al. (2010), trust can operate as a self-enforcing contract. As self-enforcement safeguard social control operates as well (Poppo and Zenger 2002). Commonly agreed and shared governance is called voluntary governance. Supply chain partners accept a common governance structure that influences their relationship and reduce the possibility of opportunistic behavior (Heide 1994). Voluntary governance mechanisms are complex, multi-stakeholder mechanisms, e.g., code of conduct or social standards used to govern aspects of a firm's social and environmental responsibilities, especially in global supply chains (Soundararajan and Brown 2016).

8 Dyadic and Network Governance

Dyadic governance relates to organization and its first-tier client and, most of all, first their supplier. According to Crişan (2012) market, hierarchical and relational governance taxonomy refers only to a leading-firm-partner relation and as one company can have thousands of suppliers one relation could be dominated by relational governance, while the others by hierarchical or market paradigm. Networks, however, are composed of many organizations. Shift from dyads to networks governance increases the governance complexity. Moreover, emphasis on networks increases the scope of contextual factors influencing the relation between governance mechanisms and network performance (Pilbeam et al. 2012). Taking the network as a unit, shared governance or governance by a focal organization (lead organization or an independent network administrative organization) is possible (Alvarez et al. 2010).

Network shared governance refers to set of mechanisms that support and sustain cooperation between participating organizations to increase the likelihood of achieving network goals. It is a system linking independent actors in which all partners have the same rights and obligation. Cooperation based on network governance is characterized by: interdependence, equality of entities, access to assets of entities participating in the network, risk sharing, increased flexibility, knowledge exchange, relying on direct personal contact as well as the prevalence of such mechanisms as loyalty and trust over administrative, formal procedures or pricing mechanisms (Powell 1990). Entities within a network consider cooperation as the best way to

achieve common goals. Network governance mechanisms are trust, equity, behavioral norms, and sanctions (Greening and Rutherford 2011).

Network governance is considered as kind of hybrid governance on continuum between market and hierarchy governance or sometimes, by some researchers, as a separate, third form of coordinating business activity (Powell 1990). Supply networks are characterized by sets of relationships that may change after network goal achievement (Andersen and Christensen 2005).

9 Single and Plural Governance

Singular governance assumes using only one governance mechanism in a substitutive manner while plural governance—combination of governance mechanisms treating them as complementary (Bouncken et al. 2016). There is no agreement on whether governance mechanisms are substitutes or complement, e.g., there are opinion that trust in supply network coexists with contracts or power (Chang and Tang 2005), trust reduces the need for control (Inkpen and Currall 2004; Dekker 2004), trust and control are complementary, and control especially in the initial stages of building relationships affects the increase of trust (Poppo and Zenger 2002). However, single governance structure is not always found within the same industry and even within the same company for the same transaction (Lopes and Leite 2016) and today's companies' choice to govern the interactions among the organizations in a network is rather not between one mechanism or another but between one set of mechanisms or another alternative combination (Alvarez et al. 2010).

Simultaneous interplay of different governance mechanisms could lead to synergistic results. Blome et al. (2013) called simultaneous interplay of both relational and contractual governance elements that leads to synergistic results ambidextrous governance. Whereas the simultaneous adoption of more than one type of governance structure by the same company to coordinate similar transactions is defined as plural governance (Bradach and Eccles 1989; Martins et al. 2017; Heide 2003). Plural governance means relaying simultaneously on different types of governance or different types of contract for the same type of transactions and within the same institutional and competitive environment (Martins et al. 2017).

The explanation for the coexistence of plural governance forms in the same industry or company may resulting from functioning of supply chain in a specific economic or legal environment in region or country, e.g., the difference between institutional environmental incentives. The others are market fluctuations, bargaining power of suppliers, stricter coordination and quality, and the exchange context (Martins et al. 2017). Adoption of plural forms reduces the risk of complex transactions (Carrer et al. 2014).

10   Conclusion

The issue of supply chain governance is extremely important because the need to manage interorganizational relations results from the necessity of functioning in todays' business reality. There are currently a small number of companies that can independently deliver products or services to the market. Building proper supply relationships is the determinant of efficient and effective supply chain.

However, supply chain governance is a quite new issue, still not well recognized in the literature. There is a particularly small number of publications presenting the results of quantitative research relating to governance mechanisms beyond the first-tier suppliers. One of main problems is also the dynamic and changing nature of relationship and the identification of appropriate governance mechanisms for specific conditions. The results of literature review show that supply chains are complex systems characterized by the existence of various governance mechanisms. There is no one governance mechanisms as there is no identical supply chain and the choice is rather not between one mechanism or another but between set of mechanisms and another alternative combination. There are some general conclusion concerning governance, e.g., contract governance is more effective in limiting opportunism while relational governance in improving relationship performance. The occurrence of specific governance structure and mechanisms is related to supply chain performance at the strategic or operational level. A significant and new research area is also the influence of governance mechanisms on building sustainable or green supply chains.

References

Aitken, J., & Harrison, A. (2013). Supply governance structures for reverse logistics systems. *International Journal of Operations & Production Management, 33*(6), 745–764.

Alvarez, G., Pilbeam, C., & Wilding, R. (2010). Nestlé Nespresso AAA sustainable quality program: An investigation into the governance dynamics in a multi-stakeholder supply chain network. *Supply Chain Management: An International Journal, 15*(2), 165–182.

Andersen, P. H., & Christensen, P. R. (2005). Bridges over troubled water: Suppliers as connective nodes in global supply networks. *Journal of Business Research, 58*(9), 1261–1273.

Beamon, B. M. (1999). Measuring supply chain performance. *International Journal of Operations & Production Management, 19*(3), 275–292.

Blome, C., Schoenherr, T., & Kaesser, M. (2013). Ambidextrous governance in supply chains: The impact on innovation and cost performance. *Journal of Supply Chain Management, 49*(4), 58–90.

Bouncken, R. B., Clauß, T., & Fredrich, V. (2016). Product innovation through coopetition in alliances: Singular or plural governance? *Industrial Marketing Management, 53*, 77–90.

Bradach, J. L., & Eccles, R. G. (1989). Price, authority, and trust: From ideal types to plural forms. *Annual Review of Sociology, 15*, 97–118.

Cannon, J. P., Achrol, R. S., & Gundlach, G. T. (2000). Contracts, norms, and plural form governance. *Academy of Marketing Science, 28*(2), 180–194.

Carey, S., & Lawson, B. (2011). Governance and social capital formation in buyer-supplier relationships. *Journal of Manufacturing Technology Management, 22*(2), 152–170.

Carrer, M. J., Souza Filho, H. M., & Vinholis, M. d. M. B. (2014). Plural forms of governance in the beef industry: A case study in Brazil. *British Food Journal, 116*(4), 643–661.

Chang, Y. H., & Tang, B. (2005). Trust, partnership and power in construction: Theory and applications in Hong Kong. *Journal of Construction Procurement, 11*(2), 94–111.

Cheng, J.-H., Chen, M.-C., & Huang, C.-M. (2014). Assessing inter-organizational innovation performance through relational governance and dynamic capabilities in supply chains. *Supply Chain Management: An International Journal, 19*(2), 173–186.

Crişan, E. (2012). Supply chain governance and multinational corporation' governance – A theoretical comparison. *Polish Journal of Management Studies, 6*, 33–43.

Crişan, E. (2016). A separation between supply chain management and supply chain governance. *Review of International Comparative Management, 17*(3), 240–249.

Crişan, E., Parpucea, I., & Ilies, L. (2011). Models for supply chain governance, proceedings of the 7th European conference on management leadership and governance Sophia-Antipolis, France.

Crişan, E., Parpucea, I., & Ilieş, L. (2011). The relation between supply chain performance and supply chain governance practices. *Management & Marketing Challenges for the Knowledge Society, 6*(4), 637–644.

Dekker, H. C. (2004). Control of inter-organizational relationships: Evidence on appropriation concerns and coordination requirements. *Accounting, Organizations and Society, 29*(1), 27–49.

Dolci, P. C., & Maçada, A. C. G. (2014). Information technology investments and supply chain governance. *Revista de Administração Contemporânea, 18*(2), 217–235.

Gellynck, X., & Molnár, A. (2009). Chain governance structures: The European traditional food sector. *British Food Journal, 111*, 762–775.

Gimenez, C., & Sierra, V. (2013). Sustainable supply chains: Governance mechanisms to greening suppliers. *Journal of Business Ethics, 116*(1), 189–203.

Gosh, A., & Fedorowicz, J. (2008). The role of trust in supply chain governance. *Business Process Management Journal, 14*(4), 453–470.

Greening, P., & Rutherford, C. (2011). Disruptions and supply networks: A multi-level, multi-theoretical relational perspective. *The International Journal of Logistics Management, 22*(1), 104–126.

Gunasekaran, A., Patel, C., & McGaughey, R. E. (2004). A framework for supply chain performance measurement. *International Journal of Production Economics, 87*, 333–347.

Halldórsson, Á., & Skjøtt-Larsen, T. (2006). Dynamics of relationship governance in TPL arrangements – A dyadic perspective. *International Journal of Physical Distribution & Logistics Management, 36*(7), 490–506.

Hammervoll, T. (2011). Governance of value creation in supply chain relationships. *Supply Chain Forum: An International Journal, 12*(2), 116–126.

Heide, J. B. (1994). Interorganizational governance in marketing channels. *Journal of Marketing, 58*(1), 71–85.

Heide, J. B. (2003). Plural governance in industrial purchasing. *Journal of Marketing, 67*, 18–29.

Inkpen, A. C., & Currall, S. C. (2004). The co-evolution of trust, control and learning in joint ventures. *Organization Science, 15*(5), 586–599.

Jain, K., & Dubey, A. (2005). Supply chain collaboration: A governance perspective. *Supply Chain Forum an International Journal, 6*(2), 50–57.

Jean, R.-J., Sinkovics, R. R., & Kim, D. (2010). Drivers and performance outcomes of relationship learning for suppliers in cross-border customer–supplier relationships: The role of communication culture. *Journal of International Marketing, 18*(1), 63–85.

Jüttner, U., Christopher, M., & Baker, S. (2007). Demand chain management – Integrating marketing and supply chain management. *Industrial Marketing Management, 36*(3), 377–392.

Lambert, D. M., & Cooper, M. C. (2000). Issues in supply chain management. *Industrial Marketing Management, 29*, 65–83.

Lopes, D., & Leite, A. (2016). What accounts for plural forms of governance structure in the same industry or firm – The case of the Brazilian electricity industry. *Brazilian Administration Review, 13*(4), 2–18.

Lu, Q., Goh, M., Thangarajoo, R., & de Souza, R. (2010). Third-party governance in supply chains, 8th international conference on supply chain management and information, Hong Kong, China.

Martins, F. M., Trieneken, J., & Omta, O. (2017). Governance structures and coordination mechanisms in the Brazilian pork chain – Diversity of arrangements to support the supply of piglets. *International Food and Agribusiness Management Review, 20*(4), 511–531.

McCarthy-Byrne, T. M., & Mentzer, J. T. (2011). Integrating supply chain infrastructure and process to create joint value. *International Journal of Physical Distribution & Logistics Management, 41*(2), 135–161.

Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). Defining supply chain management. *Journal of Business Logistics, 22*(2), 1–25.

Narayanan, S., Narasimhan, R., & Schoenherr, T. (2015). Assessing the contingent effects of collaboration on agility performance in buyer-supplier relationships. *Journal of Operations Management, 33–35*, 140–154.

Nooteboom, B. (1999). *Inter-firm alliances: Analysis and design*. London: Routledge.

Pilbeam, C., Alvarez, G., & Wilson, H. (2012). The governance of supply networks: A systematic literature review. *Supply Chain Management: An International Journal, 17*(4), 358–376.

Ploetner, O., & Ehret, M. (2006). From relationships to partnerships – New forms of cooperation between buyer and seller. *Industrial Marketing Management, 35*(1), 4–9.

Poppo, L., & Zenger, T. (2002). Do formal contracts and relational governance function as substitutes of complements? *Strategic Management Journal, 23*(8), 707–725.

Powell, W. W. (1990). Neither market nor hierarchy: Network forms of organization. *Research in Organizational Behavior, 12*, 295–336.

Rinehart, L. M., Eckert, J. A., Handfield, R. B., Page, T. J., & Atkin, T. (2004). An assessment of supplier-customer relationships. *Journal of Business Logistics, 25*(1), 25–62.

Ryciuk, U. (2017). Identification of factors related to trust formation in construction supply chains. *Procedia Engineering, 182*, 627–634.

Sharma, D. D. (1998). A model for governance in international strategic alliances. *The Journal of Business and Industrial Marketing, 13*(6), 511–528.

Simatupang, T. M., & Sridharan, R. (2008). Design for supply chain collaboration. *Business Process Management Journal, 14*(3), 401–418.

Soundararajan, V., & Brown, J. A. (2016). Voluntary governance mechanisms in global supply chains: Beyond CSR to a stakeholder utility perspective. *Journal of Business Ethics, 134*, 83–102.

Tachizawa, E. M., & Wong, C. Y. (2014). Towards a theory of multi-tier sustainable supply chains: A systematic literature review. *Supply Chain Management: An International Journal, 19*(5/6), 643–663.

Tachizawa, E. M., & Wong, C. Y. (2015). The performance of green supply chain management governance mechanisms: A supply network and complexity perspective. *Journal of Supply Chain Management, 51*(3), 18–32.

Toni, A., & Tonchia, S. (2001). Performance measurement systems – Models, characteristics and measures. *International Journal of Operations & Production Management, 21*(1/2), 46–71.

Varoutsa, E., & Scapens, R. (2015). The governance of inter-organisational relationships during different supply chain maturity phases. *Industrial Marketing Management, 46*(1), 68–82.

Veen-Dirks, P. M. G., & Verdaasdonk, P. J. A. (2009). The dynamic relation between management control and governance structure in a supply chain context. *Supply Chain Management: An International Journal, 14*(6), 466–478.

Vlachos, I. P. (2014). The impact of private label foods on supply chain governance. *British Food Journal, 116*(7), 1106–1127.

Wacker, J. G., Yang, C., & Sheu, C. (2016). A transaction cost economics model for estimating performance effectiveness of relational and contractual governance: Theory and statistical results. *International Journal of Operations & Production Management, 36*(11), 1551–1575.

Williamson, O. E. (1979). Transaction-cost economics: The governance of contractual relations. *Journal of Law and Economics, 22*(2), 1–9.

Williamson, O. E. (1991). Comparative economic organization: The analysis of discrete structural alternatives. *Administrative Science Quarterly, 36*(2), 269–296.

Zhao, X., Huo, B., Flynn, B. B., & Yeung, J. (2008). The impact of power and relationship commitment on the integration between manufacturers and customers in a supply chain. *Journal of Operations Management, 26*(3), 368–388.

Transformational Leadership: A Qualitative Study for the Practical Usage

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Abstract The aim of this study is to clarify the transformational leadership behaviors, related with the four dimensions of the transformational leadership construct in order to increase the consistency between theoretically defined transformational leadership behaviors and actually observed ones. In this respect, items measuring the degree of transformational leadership capability of a leader were studied and ambiguous items were chosen. Twenty participants were asked to evaluate the meaning of those items; by asking their opinions about the "specific courses of action a leader takes to behave in that particular way." Results, presented in detail, display that participant views were a valuable tool to make the fuzzy items more concrete. Study results also highlight the possibility that transformational leadership scale can and should be improved with additional in-depth investigation.

Keywords Transformational leadership · Multifactor leadership questionnaire · Practical usage

1 Introduction

Leadership literature has evolved around four main domains, namely the trait approach, behavioral approach, contingency theories, and inspirational theories. The trait approach studied leaders as people who had special traits making them different from others. Accordingly, someone can be born as a leader if he/she possesses those special leadership traits. Trait theorists focused on leadership traits, whereas the behavioral perspective considered specific leadership behaviors. As

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such, leaders can perform task-oriented and/or people-oriented behaviors. From this point of view, leadership can be learned so that leaders can be trained. Contingency school criticizes the behavioral perspective by highlighting the idea that leadership effectiveness depends on the correct match between the situational characteristics and leadership style. In this view, ideal leadership behaviors are the ones that match with the situational inputs. And finally, inspirational school, which is an updated version of the trait approach, focuses on the ability of the leaders to influence a group of followers in the direction of a future vision; by highlighting the importance of leader's abilities, characteristics, and behaviors to satisfy follower needs, increase followers' potential, and foster their contribution in creating a future state. In this respect, we believe the trait theories are still alive and well; however, in the form of inspiration and charisma.

Leadership in organizations has multiple facets; as such the leader uses management functions to establish order and transforms the organization in order to create a continuous improvement. One of the most popular theories of the inspirational school is "Transformational Leadership," mentioned by Bernard Bass in 1990. From this point of view, transformation has four dimensions. "Charisma" refers to providing a vision and mission with pride, and gaining followers' respect and trust. For "inspiration," leader communicates high expectations and with "intellectual stimulation" leader promotes the intelligence of followers. The fourth dimension, "individualized consideration," refers to giving personal attention, coaching, and advising (Bass 1990). As can be seen, transformational leaders have the role of a "change agent" and this role requires establishing a future vision, gaining followers' trust with the influence of charisma, promoting followers' potential, and giving special attention to each one as to facilitate their efforts in the direction of a desired change.

Theoretical framework seems promising. However, the practical use of transformational leadership is a debate. For instance; what are the specific leadership behaviors that define intellectual stimulation and individualized consideration? How can a leader gain followers' trust? Are there any specific courses of action to create "inspiration"? In this respect, this study aims to identify the leader behaviors that define each facet of the transformational leadership construct. Hereby, it would be possible to increase the practical usage of transformational leadership construct. First, theoretical knowledge on the transformational leadership studies is presented; next, method of the study and results will be presented. In the conclusion, results are interpreted and summarized.

2 Theoretical Framework

The employee performance is considered as the backbone of any organization, due to its role in profitability and sustainability. Organization's success depends on employees' performance, and poor performance is detrimental to the organization's success (Bambale et al. 2017). The link between employee performance and

leadership styles have been studied and leadership has been cited as the most strategic component in organizational systems, made up of various elements, such as structure, objectives, relations, rewards, procedures, and organizational policies. Transformational leadership plays a predominant role in contemporary leadership theory, of which studies confirm to be strongly correlated with organizational outcomes such as effectiveness, motivation, innovation, work engagement, satisfaction, and learning (Samanta and Lamprakis 2018).

Managers used to depend on their legitimate or coercive power in traditional times. Rather today, managers mostly engage in transactions with their employees. However, one must consider that the promise of rewards or the avoidance of penalties mostly depend on organizational policies, resources, and politics (Bass 1990). As such, transactional leadership could be highly questionable when organizational regulations tie managers' hands. However, still there is a transactional side in management. For instance, managers give contingent reward or promising rewards for employee effort, engage in active management by exception of which refers to taking corrective action if standards are failed to meet, engage in passive management by exception, refers taking corrective action when problems arise, it is passive because the leader waits for actual deviances, or laissez-faire, avoiding to take any action (Bass 1999). Basically, laissez-faire is the absence of leadership. Contrary to transactional point of view, it implies nontransaction (Bass 1996).

Bass (1996) addresses several questions with regard to leadership research and application. For example, why is stress among followers greater under transactional leadership? Accordingly, leadership could be a cause of stress; leaders who rely on monitoring others to take corrective action may increase followers' stress. Especially, when times are turbulent, followers would expect their leaders to revise missions, define common objectives, restructure situations, and suggest solutions to deal with the sources of stress and conflict. However, the leader would be incapable of taking the necessary actions if he/she solely relies on the transactional side of management. As such, transactional leadership would be ineffective if it is not supported by additional leadership actions; such as ability to transform the followers. Built upon transactional leadership, transformational leadership consists of four domains.

1. Charismatic leadership or idealized influence: The leader acts as a role model, respected, liked, and admired by followers. Leaders' actions demonstrate ethical conduct. Power cannot be used for personal gain.
2. Inspirational motivation: Team spirit, enthusiasm, optimism displayed; leader gets followers involved in desirable future states. Commitment to goals and shared vision characterizes this domain.
3. Intellectual stimulation: Followers are encouraged to speak up, address problems, find solutions, and try new ways. Different ideas are not criticized. Instead, creativity is fostered.
4. Individualized consideration: Leader builds individualized relationships with each of the followers. Individual differences in terms of needs and abilities are recognized. Listening followers, delegating tasks, developing followers' potential

are crucial. Followers are checked to see whether they need additional guidance (Bass 1996).

Transformational leadership is based on the trust and respect employees feel about their leader. The mentioned trust and respect act as motivators, in the direction of doing much more than what is expected from followers. On the leadership side, transformational leaders have a vision for the future and seek change (Krepia et al. 2018).

Transformational leadership can be either directive or supportive (Avolio and Bass 1991). In directive form of idealized influence, leader would persuade followers to trust in his/her direction to succeed. This means that the decision has been made and followers must conform; whereas in the participative form, leader would ask for followers' support to achieve the mission. In directive inspirational motivation, the leader would suggest followers to track and see their own progress whereas in the supportive form leader would establish a collective team climate to work together. Directive intellectual stimulation could be asking followers to revise the problems and look for solutions on their own, and the supportive form could invite them to discuss and solve the issues collectively. Directive individualized consideration means directly providing the support followers need, supportive form invites all followers to think what they can do all together to develop their capabilities. As can be seen, directive form is shaped as the leader establishes one-to-one relationships with followers and inspires them through the vision. Supportive form shapes a more collective sense of mission, shared vision, interactional motivation among followers and development of followers' potential by collaborating efforts to support each other.

Leadership still remains as an important factor that affects business performance. Due to the fact that leaders can influence organizational policies and actions directly, leadership outstands as an essential component of organization performance. One can say business outcomes are more governed by historical, structural, or environmental factors; however, research has demonstrated a relationship between managerial effectiveness and positive organizational performance (Sheshi and Kerçini 2017). For instance, the results of a study conducted in Bangladesh reveal that there is a negative relationship between transformational leadership and deviant behavior (deviant behavior is detrimental to job performance and the negative correlation between deviant behavior and job performance, reported in the study, confirms this assumption), while a positive association exists between transformational leadership and job performance (Uddin et al. 2017). Second, Andersen et al. (2018) report that "transformational leadership is positively associated with the degree of shared understanding of professional quality among professionals and that a shared understanding of quality is positively associated with high levels of professional quality." Moreover, authors argue that transformational leadership seems to be more prevalent in medium-sized spans of control. Micro-organizations and SMEs account for around two-thirds of total employment in global economy (Sheshi and Kerçini 2017). If a majority of organizations are in the form of small and medium enterprises, and transformational leadership plays a significant role in medium-sized spans of

control, its measurement gains additional significance due to the fact that valid construct definition and measurement can help to identify specific leadership behaviors. As such, leaders can be trained in the correct direction. According to Sun and Henderson (2017) *organizations should encourage managerial behavior that fits within the realm of transformational leadership; this can include initial or annual training courses for new managers that specifically encourage such behavior.* Numerous studies conclude that practicing transformational leadership style in the management of every organization will lead to a bright competitive future but how this leadership style is practiced is rarely disclosed (Abdullah and Varatharajoo 2017).

The first Multifactor Leadership Scale was developed by Bass (1985). The scale consists of seven dimensions for three leadership styles, namely transactional, transformational, and laissez-fare. Later, Hater and Bass (1988), established the transformational component in four dimensions: charisma, inspiration, stimulation, and consideration. MLQ 6S, by Bass and Avolio (1992) contains 21 items for seven dimensions as mentioned previously. And the final version, by Bass (1999), namely MLQ 5X, contains 36 items for the transactional, transformational, and laissez-faire leadership. Items of MLQ5X are displayed below. Transformational leadership dimensions are idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Sabwarhal et al. 2017).

- *Idealized influence*: I make others feel good to be around me; Others have complete faith in me; Others are proud to be associated with me.
- *Inspirational motivation*: I express with a few simple words what we could and should do; I provide appealing images about what we can do; I help others find meaning in their work.
- *Intellectual stimulation*: I enable others to think about old problems in new ways; I provide others with new ways of looking at puzzling things; I get others to rethink ideas that they had never questioned before.
- *Individualized consideration*: I help others develop themselves; I let others know how I think they are doing; I give personal attention to others who seem rejected.
- *Contingent reward*: I tell others what to do if they want to be rewarded for their work; I provide recognition/rewards when others reach their goals; I call attention to what others can get for what they accomplish.
- *Management by exception*: I am satisfied when others meet agreed-upon standards; As long as things are working, I do not try to change anything; I tell others the standards they have to know to carry out their work.
- *Laissez-faire leadership*: I am content to let others continue working in the same ways always. Whatever others want to do is OK with me; I ask no more of others than what is absolutely essential.

Yukl (1999) analyzes the conceptual weaknesses of transformational leadership theory. Accordingly, the conceptual weaknesses are the inclusion of ambiguous constructs, insufficient description of explanatory processes, a narrow focus on dyadic processes, omission of some relevant behaviors, insufficient specification of situational variables, and a bias toward heroic conceptions (for further information

see Yukl 1999). This study is on the same page with the proposed ideas and focuses on the ambiguous constructs and how the heroic conceptions can be transmitted into actual and practical leadership behaviors.

3   Method

The research question investigates the specific courses of action a leader takes to be transformational. In this respect, the most recent version of the Multifactor Leadership Questionnaire (MLQ 5X) was studied item by item. The questionnaire contains 36 items related with transactional leadership (contingent reward, management by exception), laissez-faire leadership, transformational leadership (inspirational motivation, idealized influence, intellectual stimulation, individualized consideration). Authors studied the meanings of the four dimensions for the transformational leadership construct and identified the blurry items. The items that were cited as blurry are listed.

1. The leader expresses his/her confidence that we will achieve our goals.
2. I have pleasure in working with him/her.
3. The leader displays a sense of power and confidence.
4. The leader emphasizes the importance of having a collective sense of mission.
5. The leader specifies the importance of having a strong sense of purpose.
6. The leader treats me as an individual rather than just a member of a group.
7. The leader focuses me on developing my strengths.
8. The leader suggests new ways of looking at how we do our jobs.

Next, an online form including demographics (age, educational status, whether participants have a transformational leader) and open-ended questions (the above listed items were translated into Turkish and for each item, participants were asked to state how a leader should behave, see Appendix) was prepared and the link was shared in the video prepared by the researchers via LinkedIn and Facebook. In the video, researchers talk about the definitions of transformational leadership and blurry items, ask the audience to share their opinions via online question form. Examples of open-ended questions: "I have pleasure working with him." Can you describe the leader with whom you would have pleasure working with? What are the courses of action this leader takes? "The leader displays a sense of power and confidence." What are the specific courses of action to display power and confidence? The data gathering started in August, ended in September 2017 and a total of 20 participants were reached.

Ages range is between 20 and 60 and average age is 33.4. Nine participants have bachelor's degree, seven have master's degree, and four have a Ph.D. degree. Eight participants think their superior is a transformational leader, seven participants wrote "No" as an answer, and five participants stated that they are "not sure" whether their leader is transformational.

4   Results

Responses to each item will be summarized one by one and an overall evaluation will be presented in the conclusion section.

Item 1: The leader expresses his/her confidence that we will achieve our goals.

Three of the participants associated leaders' behaviors of expressing confidence in goals with the "ability to apply decisions under pressure and stress." Again, three participants stated "giving inspirational speeches, not orders." "Consistency between body language and voice" was repeated for two times. "Assertive communication in transmitting ideas clearly, especially to followers who show resistance" was also mentioned two times. Persistence, not giving up at hard times and providing concrete evidence about the difference between actual situation and goals were other ideas mentioned for one time.

Item 2: I have pleasure in working with the leader.

Mentioned four times are the behaviors related with guiding followers, asking for their opinions and showing consideration. Mentioned three times are controlling followers in variable time intervals, being fair, trustworthy, and job oriented. It seems as if followers would have pleasure working with a job-oriented but participative and directive leader, who is trustworthy, fair, and considerate.

Item 3: The leader displays a sense of power and confidence.

What are the specific leadership behaviors that signal power and confidence? According to participants, the leader does not judge his/her own decisions, decides with objective information rather than office gossip, protects followers from outside threats and signals confidence as well as power with tone of voice. Those factors were mentioned twice and one participant wrote that a leader must stay calm such that would display power and confidence.

Item 4: The leader emphasizes the importance of having a collective sense of mission.

Mentioned three times are the behaviors that refer to communication with followers: talking about how mistakes and correct actions will result about a specific task and talking about the contribution of fulfilled mission and tasks. Addressing the target points by making evaluations and voice, gestures were mentioned two times. One participant wrote that a leader should talk about past failures and successes to highlight the importance of mission. As can be seen, this item refers to verbal and nonverbal communication ability of the leader.

Item 5: The leader specifies the importance of having a strong sense of purpose.

Answers were irrelevant. One participant wrote "You wrote an academic definition" and another participant wrote "This is difficult to do, it is mostly theoretical." Indeed, the item seems highly theory-based and highly blurry to become associated with leader actions.

Item 6: The leader treats me as an individual rather than just a member of a group.

Participants wrote sentences such as "The leader knows my name," "Asks specific questions about my social life," and "offers help for nonwork related

problems." Mentioned four times is helping behavior toward developing followers' weaknesses, and giving appraisals and maintaining eye contact were repeated three times.

Item 7: The leader focuses me on developing my strengths.

Mentioned for times are behaviors such as observing followers and detecting their strengths, using direct communication, giving inspirational speeches, and providing training opportunities. Assigning new tasks to develop followers' strengths and rotating followers to other work units again to develop their strong sides were mentioned two times.

Item 8: The leader suggests new ways of looking at how we do our jobs.

Participants mentioned leader behaviors three times namely as using appropriate body language, simplifying the process, and persuading others that the performance will improve. Asking questions that lead followers to their own answers, showing cause and effect relations were repeated two times. One participant wrote "Leader suggests ways so that mistakes won't be repeated again." Another sentence written by a participant is "leader knows about the tasks, can break them into smaller components and can make detailed explanations about each."

5   Conclusion

Transformational leaders transform their followers through a shared future vision, inspiration with confidence and charisma, stimulation in terms of growing their strengths and individualized consideration such as being familiar with their personal lives. Results highlight specific behaviors in accordance with the previously mentioned dimensions such as giving inspirational speeches (idealized influence), guiding others when needed (inspirational motivation), observing and detecting others' weaknesses (intellectual stimulation), and asking questions about personal life (individualized consideration).

Therefore, according to our research results, a transformational leader:

- Uses appropriate body language, gestures, and tone of voice (most repeated!)
- Establishes consistency between verbal and nonverbal forms of communication.
- Displays persistence when making and applying decisions.
- Asks followers' opinions and gives guidance.
- Controls followers in variable time intervals.
- Stays calm under turbulent times.
- Decides with objective information.
- Protects followers from outside threats.
- Observes the situations, evaluates current situation, and shows cause–effect relations.
- Talks about past failures and experiences so that mistakes would not be repeated.
- Asks questions about followers' nonwork life and offers help.
- Assigns tasks to improve follower strengths.

– Provides training or rotation to improve followers' potential.

The limitations of this study can be listed as:

– Conveniently chosen participants (no company size limitation, no industry limitation).
– Online form usage (face-to-face interviews could provide more in-depth information).
– Small sample size (20 participants).
– Only the meanings of eight blurry items were included in the study (the rest of the questionnaire was ignored as authors decided that the rest of the items were not blurry).

For further research, we plan to expand our sample with foreign participants and also include multiple data gathering methods such as observation, focus group, and interviews in order to conceptualize the behavioral patterns of transformational leaders.

Appendix: Online Question Form

How Do Leaders Transform Their Organizations?

Your Suggestions to Merge Theory with Practice

Transformational leaders have inspiring future visions. Those leaders share their visions with their followers. Basically they gain their followers' respect and trust, and persuade them to share the vision. The vision includes leader's dreams and it is the leader's job to make those dreams come true, by acting as a change agent. The high expectations are communicated with enthusiasm, through individualized attention. The relationships with followers include coaching and increasing their potential by leading them to required mental models and behaviors that would foster the desired change.

The abovementioned definition seems blurry. We would like to make it more clear by identifying specific leader behaviors that would be expected from a transformational leader. Help us list those behaviors by reading each item below and writing your suggestions.

1. The leader expresses his/her confidence that we will achieve our goals.
   How does a leader display confidence? What are the actions that a leader performs to display confidence?
2. I have pleasure in working with him/her.
   Describe the leader that you would have pleasure working with and behaviors you expect from her/him.

3. The leader displays a sense of power and confidence.
   How does a leader display sense of power and confidence? List the leader behaviors that would display power and confidence.
4. The leader emphasizes the importance of having a collective sense of mission.
   How does the leader emphasize the importance of collective sense of mission? Can you list specific leader behaviors?
5. The leader specifies the importance of having a strong sense of purpose.
   How does the leader emphasize the importance of having strong sense of purpose? Can you list specific leader behaviors?
6. The leader treats me as an individual rather than just a member of a group.
   What are the courses of action that a leader takes to treat you as an individual?
7. The leader focuses me on developing my strengths.
   What are the courses of action a leader takes to lead you toward developing your strengths?
8. The leader suggests new ways of looking at how we do our jobs.
   What are the courses of action a leader takes to suggest new ways of looking at performing the jobs?

Name-Surname:
E-mail:
Your gender:
Your age:
Your educational status:
Do you work with a transformational leader: () Yes () No.

References

Abdullah, Q. D. L., & Varatharajoo, K. D. R. (2017). Transformational leadership and its functionality in arts organization. *International Journal of Business and Society, 18*(S4), 710–717.

Andersen, L. B., Bjørnholt, B., Bro, L. L., & Holm-Petersen, C. (2018). Achieving high quality through transformational leadership: A qualitative multilevel analysis of transformational leadership and perceived professional quality. *Public Personnel Management, 47*(1), 51–72.

Avolio, B. J., & Bass, B. M. (1991). *The full range of leadership development: Basic and advanced manuals*. Binghamton, NY: Bass, Avolio, & Associates.

Bambale, A. J. A., Girei, A. A., & Barwa, T. M. (2017). Leadership styles and workers' performance in small and medium scale industries in Adamawa state, Nigeria: A research model. *Journal of Economic Development, Management, IT, Finance & Marketing, 9*(2), 14–23.

Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York: Free Press.

Bass, B. M. (1990). From transactional to transformational leadership: Learning to share the vision. *Organizational Dynamics, 18*(3), 19–31.

Bass, B. M. (1996). *A new paradigm for leadership: An inquiry into transformational leadership*. US Army Research Institute.

Bass, B. M. (1999). Two decades of research and development in transformational leadership. *European Journal of Work and Organizational Psychology, 8*(1), 9–32.

Bass, B. M., & Avolio, B. J. (1992). *Multifactor leadership questionnaire—Short form 6s*. Binghamton, NY: Center for Leadership Studies.

Hater, J. J., & Bass, B. M. (1988). Superiors' evaluations and subordinates' perceptions of transformational and transactional leadership. *Journal of Applied psychology, 73*(4), 695–702.

Krepia, V., Katsaragakis, S., Kaitelidou, D., & Prezerakos, P. (2018). Transformational leadership and its evolution in nursing. *Progress in Health Sciences, 8*(1), 189–194.

Sabwarhal, M., Levine, H., & D'Agostino, M. J. (2017). Gender differences in the leadership styles of MPA directors. *Journal of Public Affairs Education, 23*(3), 869–884.

Samanta, I., & Lamprakis, A. (2018). Modern leadership types and outcomes: The case of Greek public sector. *Management: Journal of Contemporary Management Issues, 23*(1), 173–191.

Sheshi, A., & Kerçini, D. (2017). The role of transactional, transformational and participative leadership in performance of SME's in Albania. *Albanian Journal of Agricultural Sciences*, 285–292.

Sun, R., & Henderson, A. C. (2017). Transformational leadership and organizational processes: Influencing public performance. *Public Administration Review, 77*(4), 554–565.

Uddin, M. A., Rahman, M. S., & Howladar, M. H. R. (2017). Empirical study on transformational leadership, deviant behaviour, job performance, and gender: Evidence from a study in Bangladesh. *European Journal of Management Studies, 22*(2), 77–97.

Yukl, G. (1999). An evaluation of conceptual weaknesses in transformational and charismatic leadership theories. *Leadership Quarterly, 10*(2), 285–306.

Modeling the Determinants of Employee Belief and Attitude for the Adoption of Green IT

Adedapo Oluwaseyi Ojo, Murali Raman, and Rameswaran Vijayakumar

Abstract This study offers a theoretical explanation of the underlying factors for employee's engagement in Green IT. The proposed model examines engagement in sustainable IT practices from the perspective of employee's adoption of GIT and suggests the role of attitude in enabling such. Drawing on the belief–action–outcome (BAO) framework, this study delineates the micro- and macro-level factors underlying the formation of employee's beliefs and attitude toward GIT, which in turn leads to the adoption of GIT. The proposed model contributes to the extant literature in GIT adoption by suggesting the role of personal competence, and organizational structure and culture in employee's engagement in environmental sustainability initiatives.

Keywords Green IT adoption · Belief · Attitude · Micro-level · Macro-level

1 Introduction

The reduction of greenhouse gases (GHG) and shift toward the sustainable environment have become inevitable due to rapid urbanization, increasing population and economic activities, which have collectively heightened energy consumption. Not surprisingly, at the Paris Climate Summit in December 2015, 182 countries have collectively pledged to reduce the (GHG) emissions intensity of GDP by 45% by 2030, thus setting in motion the green economic advancement. Green growth is conceived to ensure sustainable development through the creation of resilient, low-carbon, and resource-efficient economic and social environment. The World Council on Economic Development defines sustainability as operating in ways that meet the needs of the present without compromising the ability of future generations to meet their own needs. The attainment of the sustainability goals will depend on

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the underlying patterns of consumption and production. Thus, green strategies have been introduced in attempts to slow down and reverse the environmental degradation caused by industrial pollution. Furthermore, the green concepts have continued to gain attention from several fields of management including marketing, accounting, strategic management, and IT (Kee-Hung et al. 2010; Renwick et al. 2012).

IT has been a major driver of sustainable competitive advantage, but this at a greater cost to the environment. The global IT usage is growing at a rate higher than the Gross World Product and accounting for the larger share of the total energy costs (Melville 2010). Specifically, the contributions of IT to the carbon footprint have surpassed that of the aviation industry and forecasted to be triple by the year 2020 (Gelenbe and Caseau 2015). To reverse this trend, both academics and practitioners have repeatedly called for Greener IT consumption and production. Green IT (GIT) is "a systematic application of ecological-sustainability criteria (such as pollution prevention, product stewardship, use of clean technologies) to the creation, sourcing, use and disposal of the IT technical infrastructure as well as within the IT human and managerial practices" (Molla et al. 2011, p. 73).

GIT can directly affect environmental sustainability, through IT operations focused on reducing carbon emission and wastage and indirectly as tools for enabling other business initiatives to reduce their production of GHG (Molla et al. 2011). As compared to the adoption of other technologies, GIT initiatives require a longer period to break-even and are likely to be driven more by softer benefits such as employee morale and good corporate citizenship than by hard dollar gains (Olson 2008). Although, organizations are strategically allocating resources to enhance innovative business practice through sustainable IT operations, yet most GIT strategy have not been very effective (Renwick et al. 2012; Zaman and Sedera 2015). This is due to the lack of clear understanding on how to implement GIT, most especially on the engagement of employees in such strategy (Tan et al. 2011).

The increasing adoption of GIT has been associated with several factors including the expanding online services, increasing energy costs, regulatory compliance and growing awareness on the environmental impact of technology (Mishra et al. 2014). However, further to the organizational determinants, scholars have been implored to examine the underlying factors of employees buy-in and engagement in GIT initiatives (Jenkin et al. 2011; Molla et al. 2014). Doing this has become inevitable because the employees are responsible for managing the tools and designing the structure to support change initiative like GIT. Therefore, mindful individuals are expected to recognize and be conscious of the environmental impacts of their actions, thereby exhibiting sustainable behavior. Further exposition on employees' engagement is especially essential to understanding how behavior/actions are shaped by individuals' cognition and disposition toward GIT.

This study contributes to GIT literature by drawing on the belief–action–outcome (i.e., BAO) framework in explaining the formation of employees GIT beliefs and the implication of such on their GIT attitude. Furthermore, we clarify the role of employees GIT attitude on their behavior toward the adoption of GIT practices. The next section presents the theoretical background for our proposition.

2 Theoretical Background

The BAO framework was initially proposed to explain environmental sustainability initiative from the IS perspective by integrating literature from the business and operations management domain (Melville 2010). Based on Coleman's (1986) model of micro–macro relations, Melville (2010: p. 4) suggested the "three classes of sustainability phenomenon: (1) how cognitive states about sustainability (beliefs, opportunities, etc.) emerge; (2) actions of organizations and individuals regarding sustainability practices and processes; and (3) environmental and financial performance outcomes." Specifically, the BAO framework acknowledges three types of relations among the macro- and micro-level variables. First, the macro-level states encompass of the social and organizational structure, which shape the micro-level states of individual beliefs about the environment (macro–micro links). Second, the ensuing micro-level states can elicit one's action, i.e., disposition about sustainability (micro–micro links). Third, such actions can collectively affect the macro-level outcome about sustainability (micro–macro links).

Given the above, individual beliefs about the environment can emanate from one's observation and awareness of the social and environmental impact of sustainability. Individual's beliefs about sustainability might be informed by one's understanding of the adverse effect of non-sustainable practices on the environment, thereby shaping the disposition toward going green to save the planet (Melville 2010). According to Kollmuss and Agyeman (2002), the lack of environmental awareness can be associated with cognitive limitations including the non-immediacy of many ecological problems, slow and gradual ecological degradation. Thus, environmental awareness can alter both the cognitive and emotional states about sustainability. Besides, beliefs about GIT can originate from the organizational context. The contextual factors of organizational values can set the acceptable norms, thereby influencing the standard of behavior (Quan and Cha 2010). Melville (2010) revealed that tensions might arise when the employees value about the environment conflicts with the organizational values motivated by short-term gain. Apparently, beliefs about the environment stem from both the personal values that reflect one's awareness of the social impact of sustainability and the organizational values. Furthermore, the beliefs can influence individual attitudes toward GIT, which in turn can impact on the adoption of GIT.

The relationships among the variables of interest are presented in Fig. 1, while the hypothesized relationships are discussed in the following sections.

2.1 Awareness/Knowledge and GIT Belief and Attitude

Beliefs can originate from instincts or other sources such as personal experience, through education as well as shared cultural or societal norms (Bicchieri and Mercier 2014). Both experience and education can directly shape personal beliefs, while
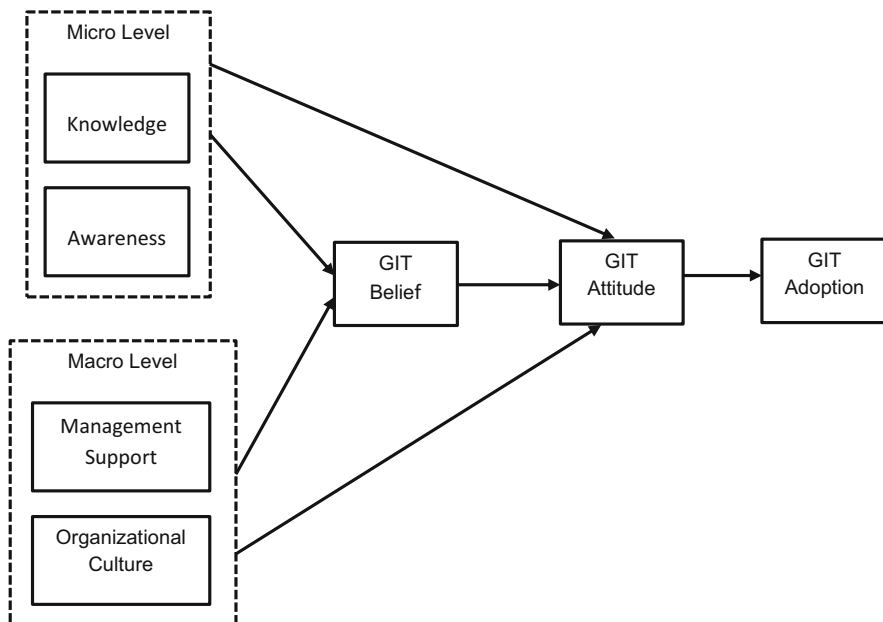
Fig. 1 Research model. Source: Developed by the authors

cultural and societal norms can influence shared beliefs. When beliefs are personally accepted, the individuals are driven to prove and defend such as the truth. This enduring belief is often referred to as value.

Through experience and education, individuals deepen their awareness and knowledge, which in turn can shape their beliefs about the environment. Kaplan (1991) underscored the significant impact that one's knowledge about an issue has on the beliefs underlying the action. People tend to avoid situations where their existing knowledge is insufficient to guide their behavior, most especially, when their perception of uncertainty is greater (Chan et al. 2014). Therefore, belief extends in line with the knowledge an individual has acquired about a particular issue. For instance, personal belief about the environment can emerge from one's awareness/ knowledge of the impact that human behavior has on the environment.

According to Kollmuss and Agyeman (2002), individual's environmental awareness can be cognitively and emotionally constrained. While most employees are likely to be aware of the adverse effect of non-GIT practices on environmental degradation, yet many have taken insufficient actions to reverse this effect. Given the slow pace of environmental degradation, people tend to delay action and ignore the urgency despite having the information and predicted the seriousness of this issue (Mitomo and Otsuka 2012). Hence, the lack of immediate effect of non-sustainable practices on environmental degradation and the complexity of the ensuing problem can cognitively limit one's belief about sustainability. However, mindful individuals are likely to hold on to sustainability beliefs, thereby informing their attitude toward

sustainability actions (Amel et al. 2009; Jenkin et al. 2011). The more aware an individual is about the environment, the more mindful he/she is of the adverse effect of non-sustainable practices thereby influencing the willingness to spend more on eco-friendly products/organic foods, as well as participate in recycling programs (Grankvist and Biel 2007; Ottman et al. 2006).

Similarly, IT professionals who are well informed through Green IT training and seminars, and exposed to the Green IT requirements of customers and best practices are likely to hold positive beliefs about Green IT. Sarkar and Young (2009) revealed that the lack of sufficient knowledge on environmental sustainability is a significant contributor to IT managers' indifference toward sustainability. Therefore, IT professionals' beliefs about Green IT deepen with increasing awareness/knowledge, thereby influencing their attitude toward Green IT.

Given the above, the following hypotheses are suggested:

H1a GIT awareness is positively related to GIT belief.

H1b GIT awareness is positively related to attitude toward GIT.

H2a GIT knowledge is positively related to GIT belief.

H2b GIT knowledge is positively related to attitude toward GIT.

2.2 Management Support and GIT Beliefs and Attitude

The organizational structure enables the employees to recognize the set of acceptable norms and management disposition toward work practices (Quan and Cha 2010). Therefore, employees' GIT beliefs and attitude can be shaped through the disposition and direct engagement of top management in GIT initiatives (Cairns et al. 2010). According to Cairns et al. (2010) employees' perception of the management's commitment toward sustainability can directly impact on their beliefs and disposition toward sustainability. Managers' values and actions about sustainability are perceived as acceptable behavior by the employees, thereby shaping their beliefs and attitude toward sustainability. Employees form and develop positive beliefs and attitudes toward sustainability when the leader demonstrate a strong commitment toward green leadership (Sarkar and Young 2009; Bose and Luo 2011). A comparative study of energy consumption in schools revealed a strong negative relationship between leadership support and consumption (Schelly et al. 2011). Specifically, energy use dropped by 50% in the school where the principal personally communicated and demonstrated his values and commitment toward sustainability. Employees are likely to appreciate the need for and engage in sustainability practices when they observe adequate support from above through the demonstration of green leadership (Jones et al. 2012). Thus, we suggest the following hypotheses:

H3a Management support is positively related to GIT belief.

H3b Management support is positively related to attitude toward GIT.

2.3   Organizational Culture and GIT Belief and Attitude

Culture entails the norms and beliefs underlying behavior within a social context. Culture sets the tone for acceptable behavior and decisions of the employees by creating and reinforcing expectations about what is valued and how things should be done. Through culture, an organization assumes its identity and communicates its values and behavior to its members. A culture of sustainability ensures when the employees accept shared assumptions and beliefs about the complementary significance of economic efficiency, social equity, and environmental accountability. One of the primary elements of culture is communication. Through environmental communication, an organization can reinforce the beliefs and behavior of its members toward sustainability (Young et al. 2015). The means, quality, and frequency of communication about environmental sustainability might address the lack of visibility of pro-environmental policies and practices in the organization (Onkila 2015). Furthermore, the actions and inactions of the organization members can both reinforce and reshape the organizational culture. Therefore, environmental communication might potentially transform the culture, thereby facilitating employees' beliefs and attitude toward GIT. Based on the above, the following hypotheses are suggested:

H4a   Organizational culture is positively related to GIT belief.

H4b   Organizational culture is positively related to attitude toward GIT.

2.4   GIT Belief and Attitude

GIT belief captures the employees' long-lasting perception and cognition on the impact of IT on the environment and their role in influencing the related environmental issues. Fishbein and Ajzen (1975, 2010) hypothesized the interplay among beliefs, attitudes, and behavior. According to them belief in or about something is a precursor to attitudinal change, which in turn influence one's intention to perform a particular behavior. Nevertheless, a belief can change independently of an attitude (Fishbein and Ajzen 2010). When beliefs are personally accepted, the individuals are driven to prove and defend such as the truth. Such enduring beliefs constitute one's value. Hence, employees' attitude toward the environment might stem from their beliefs about the impact of human behavior on the environment, thereby triggering the sense of personal responsibility toward acting in the interest of the environment (Stern 2000). Personal beliefs have been demonstrated to have a significant impact on individual's sustainability behavior in varied contexts such as consumer behavior (Nordlund and Garvill 2003), environmental citizenship (Stern 2000), and Green IT (Molla et al. 2014; Mishra et al. 2014). Molla et al. (2014) contend that unlike the general environmental beliefs, individual's specific beliefs about the environmental strongly relate to attitudinal change. While people might act in a way contrary to a

general assumption about nature, situational constraints are most likely to impact their behavior. Hence, employees with good awareness on the positive and adverse implications of IT on the environment are likely to influence environmental-friendly norms and practices (Molla et al. 2014). Therefore,

H5 GIT belief is positively related to attitude toward GIT.

2.5   GIT Attitude and Adoption

The adoption of environmental sustainability initiative like Green IT has been attributed to employees' attitude (Jackson and Seo 2010). Positive attitude toward the environment can manifest through individual's voluntary participation and commitment to ensuring greener organization. Studies have empirically investigated the link between pro-environmental attitude and organizational citizenship behavior and validated its implication on environmental performance (Daily et al. 2009; Paille et al. 2014). According to Daily et al. (2009) citizenship behavior entails the *"discretionary acts by employees within the organization not reward or required that are directed toward environmental improvement"* (p. 246). Discretionary acts are dependent on attitude, wherein the employees demonstrate their commitment to environmental sustainability concerning their job, other people in the workplace and organization. Affective commitment is an attitude that reflects the internal drive toward cooperation (Tyler and Blader 2003). Thus, committed employees are well disposed to cooperating with the organization and its members by acting beyond their job responsibilities in an attempt to benefit the environment (Paille et al. 2014).

Attitude toward Green IT entails employee's commitment to taking responsibility for climate change and sustainability practices (Molla et al. 2011). Employees who associate climate change with human behavior demonstrate positive attitude through their commitment toward sustainability practices. While those that are skeptical/ignorant of the link between human behavior and climate change show negative attitude through their lack of engagement (Hasan and Dwyer 2010). Accordingly, studies have reported attitude as an underlying factor for the variation in employees' adoption of pro-environmental behaviors (Molla et al. 2014; Chow and Chen 2009). Thus,

H6 Attitude toward GIT is positively related to the adoption of GIT.

3   Conclusion

This study offers a conceptual explanation for the engagement of IT personnel in GIT adoption. We argue that employee's buy-in and participation are essential for the attitudinal change required for the successful adoption of GIT. In other words, engaged employees are expected to be able to recognize the environmental impacts

of non-sustainable practices. Thus, they are more likely to exhibit sustainable GIT beliefs and actions. Accordingly, we posit the cognitive and motivational factors underlying employees' beliefs and attitude toward GIT. Specifically, this study draws on the BAO framework to explain the underlying micro- and macro-level determinants of employees GIT beliefs. Furthermore, the model posits the link from such beliefs to attitude as well as the implications of attitude in the adoption of GIT. Hence, this study contributes to theoretical knowledge on GIT adoption in two significant ways.

First, we advance extant theoretical explanation on the formation of individual's GIT belief by integrating the underlying micro and macro determinants (Melville 2010; Molla et al. 2014). This is in line with Molla et al.'s (2014) suggestion on the need for further studies to consider the relevant structural and organizational factors underlying belief formation. In addressing this gap, we hypothesize the role of management support and organizational culture in the formation of beliefs and attitude toward GIT.

Second, the proposed model can be adopted by future studies to demonstrate the appropriateness of an alternative explanation for the adoption of GIT. The present framework suggests the role of employees and organization in facilitating the beliefs, attitude, and adoption of GIT by the former. Future empirical studies can adopt this framework in an attempt to demonstrate the significance of micro and macro factors on employees' engagement in GIT.

References

Amel, E. L., Manning, C. M., & Scott, B. A. (2009). Mindfulness and sustainable behavior: Pondering attention and awareness as means for increasing green behavior. *Ecopsychology, 1* (1), 14–25.

Bicchieri, C., & Mercier, H. (2014, January). Norms and beliefs: How change occurs. *The Jerusalem Philosophical Quarterly, 63*, 60–82.

Bose, R., & Luo, X. (2011). Integrative framework for assessing firms' potential to undertake green it initiatives via virtualization–a theoretical perspective. *The Journal of Strategic Information Systems, 20*(1), 38–54.

Cairns, S., Newson, C., & Davis, A. (2010). Understanding successful workplace travel initiatives in the UK. *Transportation Research Part A: Policy and Practice, 44*(7), 473–494.

Chan, E. S. W., Hon, A. H. Y., Chan, W., & Okumus, F. (2014, September). What drives employees' intentions to implement green practices in hotels? The role of knowledge, awareness, concern and ecological behavior. *International Journal of Hospitality Management, 40*, 20–28.

Chow, W., & Chen, Y. (2009). Intended belief and actual behavior in green computing in Hong Kong. *The Journal of Computer Information Systems, 50*(2), 136–141.

Coleman, J. S. (1986). Social theory, social research, and a theory of action. *The American Journal of Sociology, 91*(6), 1309–1335.

Daily, B. F., Bishop, J. W., & Govindarajulu, N. (2009). A conceptual model for organizational citizenship behavior directed toward the environment. *Business & Society, 48*(2), 243–256.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading: Addison-Wesley.

Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior*. New York: Taylor & Francis.

Gelenbe, E., & Caseau, Y. (2015). The impact of information technology on energy consumption and carbon emissions. *Ubiquity, 6*(1), 1–15.

Grankvist, G., & Biel, A. (2007). The impact of environmental information on professional purchasers' choice of products. *Business Strategy and the Environment, 16*(6), 421–429.

Hasan, H., & Dwyer, C. (2010). Was the Copenhagen summit doomed from the start? Some insights from green IS research. In *Proceedings of Americas Conference on Information Systems 2010* (pp. 1–12). Peru: SAP.

Jackson, S. E., & Seo, J. (2010). The greening of strategic HRM scholarship. *Organization Management Journal, 7*(4), 278–290.

Jenkin, T. A., Webster, J., & McShane, L. (2011). An agenda for green information technology and systems research. *Information and Organization, 21*, 17–40.

Jones, J., Jackson, J., Tudor, T., & Bates, M. (2012). Strategies to enhance waste minimization and energy conservation within organizations: A case study from the UK construction sector. *Waste Management and Research, 30*(9), 981–990.

Kaplan, S. (1991). Beyond rationality: Clarity-based decision making. In T. Garling & G. Evans (Eds.), *Environment, cognition and action* (pp. 171–190). New York: Oxford University Press.

Kee-hung, L., Cheng, T., & Tang, A. (2010). Green retailing: Factors for success. *California Management Review, 52*, 6–31.

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research, 8*(3), 239–260.

Melville, N. P. (2010). Information systems innovation for environmental sustainability. *MIS Quarterly, 31*, 1–21.

Mishra, D., Akman, A., & Mishra, A. (2014). Theory of reasoned action application for green information technology acceptance. *Computers in Human Behavior, 36*, 29–40.

Mitomo, H., & Otsuka, T. (2012). Rich information on environmental issues and the poor reflections on consumers' green actions: A behavioral economic approach. *Telematics and Informatics, 29*(4), 400–408.

Molla, A., Cooper, V., & Pittayachawan, S. (2011). The green IT readiness (G-readiness) of organizations: An exploratory analysis of a construct and instrument. *Communications of the Association for Information Systems, 29*(4), 67–96.

Molla, A., Abareshi, A., & Cooper, V. (2014). Green IT beliefs and pro-environmental IT practices among IT professionals. *Information Technology and People, 27*(2), 129–154.

Nordlund, A. M., & Garvill, J. (2003). Effects of values, problem awareness, and personal norm on willingness to reduce personal car use. *Journal of Environmental Psychology, 23*(4), 339–347.

Olson, E. (2008). Creating an enterprise-level 'green' strategy. *Journal of Business Strategies, 29* (2), 22–30.

Onkila, T. (2015). Pride or embarrassment? Employees' emotions and corporate social responsibility. *Corporate Social Responsibility and Environmental Management, 22*(4), 222–236.

Ottman, J. A., Stafford, E. R., & Hartman, C. L. (2006). Avoiding green marketing myopia: Ways to improve consumer appeal for environmentally preferable products. *Science and Policy for Sustainable Development, 48*(5), 22–36.

Paille, P., Chen, Y., Boiral, O., & Jin, J. (2014). The impact of human resource management on environmental performance: An employee-level study. *Journal of Business Ethics, 121*, 451–466.

Quan, J., & Cha, H. (2010). IT certifications, outsourcing and information systems personnel turnover. *Information Technology and People, 23*(4), 330–351.

Renwick, D., Redman, T., & Maguire, S. (2012). Green human resource management: A review and research agenda. *International Journal of Management Reviews, 15*(1), 1–14.

Sarkar, P., & Young, L. (2009). *Managerial attitudes towards Green IT: An explorative study of policy drivers*. PACIS 2009 Proceedings, July 10–12, Hyderabad, India. Accessed June 20, 2017, from http://aisel.aisnet.org/pacis2009/95

Schelly, C., Cross, J. E., Franzen, W. S., Hall, P., & Reeve, S. (2011). Reducing energy consumption and creating a conservation culture in organizations: A case study of one public school district. *Environment and Behavior, 43*(3), 316–343.

Stern, P. C. (2000). New environmental theories: Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues, 56*(3), 407–424.

Tan, B., Ling Pan, S., & Zuo, M. (2011). *Attaining and enacting green leadership: Insights from the green it initiatives of China mobile*. In 32nd International Conference on Information Systems, Shanghai. Accessed June 20, 2017, from http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1003&context=icis2011

Tyler, T. R., & Blader, S. L. (2003). The group engagement model: Procedural justice, social identity, and cooperative behavior. *Personality and Social Psychology Review, 7*, 349–361.

Young, W., Davis, M., McNeill, I. M., Malhotra, B., Russell, S., Unsworth, K., & Clegg, C. W. (2015). Changing behavior: Successful environmental programmes in the workplace. *Business Strategy and the Envrionment, 24*, 689–703.

Zaman, B., & Sedera, D. (2015). *Green information technology as administrative innovation: Organizational factors for successful implementation: Literature review*. In Presented at the Australasian Conference on Information Systems 2015 (arXiv:1605.01032)

Evolution of Collaboration Risk from Bibliometric Studies Perspective

Iwona Staniec and Piotr Józwiak

Abstract Over the recent decades, research on collaboration in management sciences has constantly been garnering more and more attention. The chapter focuses in particular on technology entrepreneurship in view of its conditioning. The aim of the chapter is to present the outcome of research on collaboration risk in technology entrepreneurship using systematic review of literature. The research focuses on highlighting the significance and essence of collaboration, outlining the major research limitations and challenges, and diagnosing gaps in conditions of collaboration in technology entrepreneurship.

Keywords Risk · Collaboration/cooperation · Technology entrepreneurship · Conditions of collaboration · Bibliometric studies

1 Introduction

As demonstrated by Le Roy and Czakon (2015) and Wójcik and Czernek (2016), research on cooperation in enterprises has grown in significance recently. In networked economy, enterprises operate in a network of various relations, and thus they become dependent on one another, and the results they obtain usually depend on this mutual influence (Nielsen 2011). Increasingly, in complex, multidimensional, and holistic systems some enterprises are observed to achieve much better results than others (Hamel 2011). The source of the solution created in technology entrepreneurship is scientific knowledge of its creators, representatives of higher education institutions or scientific research centers (Beckman et al. 2012).

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Due to the nature of technology entrepreneurship and commercialization of scientific research results, entrepreneurship must closely cooperate with broadly understood scientific research communities, e.g., universities, scientific research units, centers for support of small- and medium-sized enterprises, technology transfer centers as well as vendors, distributors or clients, etc. The cooperation may be continuous, ad hoc, close, based on partnership or distant, based on a single subcontract (McMullen and Shepherd 2006, pp. 142–147).

The literature provides ample information on external and internal conditions which determine the operation of technology entrepreneurship. Shane and Venkataraman (2003, pp. 181–184) emphasize the role of technology, technical systems, anticipated technological changes, or institutional environment and particularly various scientific research centers. Thomson and Webster (2013) indicate their greater tendency to implement innovative and uncertain ventures. According to Machnik-Słomka Kordel (2016), technology entrepreneurship is dominated by the logics of accomplishment, i.e., modification of goals according to the resources at hand. Technology entrepreneurship involves small and medium-sized enterprises, so the person of the founder is of essence, and so are the qualities of the founder's character. The most important qualities identified by Kuratko et al. (2014), Short et al. (2010) and Mühlböck et al. (2018) include: courage, ability to take risk, ability to derive benefits, ability to embrace change, goal orientation, appreciation of partnership and cooperation, above-average creativity, vision of growth of one's own business, defined strategy of action and flexibility, communication. The research focuses on measuring the effects and determinants of cooperation (Ring et al. 2005). This chapter is an attempt to answer the following questions:

1. What conditions determine cooperation in entrepreneurship?
2. Does literature define the collaboration risk?

2 Methods of Literature Review

The chapter uses bibliometric study, which is construed to mean the use of qualitative and quantitative analyses to review publications in terms of their number and subject matter. Bibliometrics developed as a result of the establishment of the Science Citation Index in 1963, i.e., a register of scientific publications and citations as well as technological advancement in the area of access to information. Literature review led to identification of a base of papers to be subsequently reviewed in greater detail. Publications indexed in EBSCO and Emerald bases were analyzed. To this end, the following keywords were used:

1. Entrepreneurship and cooperation
2. Entrepreneurship and collaboration
3. Entrepreneurship and relationship

The selection criteria applied in subsequent steps are presented in Table 1.

Table 1 Search criteria

Category	Selection criteria
Database	EBSCO, emerald
Keywords range	Title, abstract
Keywords	Entrepreneurship and cooperation Entrepreneurship and collaboration Entrepreneurship and relationship
Access	Full text
Publication type	Articles
Language of publication	English
Area of science	Business and management

Source: Authors' own study

As a result of subsequent search steps, the following number of publications was obtained:

- Selection of proposed keyword sets—1732
- Full text—1032
- Scientific journals—637
- English—523
- Area of science—291
- Elimination of duplicates—273

The selected 273 abstracts were further analyzed using an algorithm developed by the authors. Initially, data was collected manually, but automated data collection was preferred due to large number of abstracts. As the first step, the possibility of creating web scraper in Python was analyzed. Unfortunately, due to the use of Javascript code on Emerald server, getting data from Emerald proved impossible with this approach. This limiting mechanism is used due to probable abuse of this service with automated web scraping. iMacros and Scrape browser extensions were used to improve the efficiency of manual data collection. In case of iMacros, this extension was used to open all abstracts on results page. As the next step, Scrape extension was used to gather all data in a tabular format.

In data preparation process to remove unnecessary words which were adding no value to the results of the analysis. The removed words (stopwords) were: an, the, this—aim, one, be, to, of, an, in, one, is, with, and as. Python, which was used for n-gram tool, offers a function of stopwords removal, but sometimes it removes too much, especially when it comes to short three-letter words such as R&D, which could be important from the research topic perspective. With online n-gram tool[1] the tool was adapted to cope with data amounts then it was initially designed with limit of 10,000 chars.

It seems that the method is not reliable enough to relay on changing security mechanisms which impede automated data collection compliant with database

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[1]N-gram tool, http://dataoz.pythonanywhere.com/toolngramform visited on 09.09.2017.

owners' policies. And with many users, its use would lead to abuse of the abstract and full text publication services. To overcome this issue, API (Application Programming Interface) access is planned to be obtained, with consent for abstract analytical use. The consent is given by EBSCO and future analyses will be prepared using this service with automated API access.

It would also be beneficial for results assessment to use other NLP (Natural Language Processing) methods which facilitate the viewing of data from different perspectives. So would also future bibliometric analytical framework methods allowing for text summarization and representation of data as graphs with implementation of word2vec or doc2vec algorithms.

The results were presented in the form of a tag cloud, used for the presentation of phrases most frequently occurring in texts (Deutsch et al. 2009). The font size used to record categories reflects their quantity. The effectiveness of a tag cloud is described in the work by Halvey and Keane (2007).

Subsequently, papers were divided into those that concerned broadly understood conditions of cooperation and other. When selecting journals for research, the next essential step was to assign each paper to a separate type and to perform a qualitative analysis intended to identify challenges and research perspectives in respect of cooperation conditions in entrepreneurship. Each such process of assignment and selection of papers involved a risk related to (Matyjas 2015, p. 357)

- Firstly: the selection, which is usually a reflection of views of the selecting researcher.
- Secondly: the choice of the selection criteria, which are usually blurred and made specific by the researcher's subjectivism.

3   Cooperation in Entrepreneurship

The preliminary base of texts intended for further analysis consisted of 273 publications. The analysis of the works concerning cooperation in entrepreneurship focused on the identification of the key issues and conditions indicated in the analyzed works. Abstracts of those publications were subject to further analysis in order to obtain a set of two- or three-word expressions most frequently used in the analyzed texts. Words such as "and," "or," etc. were excluded from analysis. For the purpose of presenting the most frequent expressions, the tag clouds shown in Figs. 1 and 2 were used.

With respect to two-word expressions, the following were the most frequent: "the study" ($60\times$ in 21.98% of analyzed papers), "technology transfer" ($54\times$ in 19.78% of papers), "case study" ($39\times$ in 14.29% of papers). It should be noted that in papers was used varied wording: only two two-word expressions could be identified that appeared in ca. 20% of the analyzed papers. Expressions interesting from technical entrepreneurship perspective also include: "technological entrepreneurship" ($16\times$ in 5.86% of papers) and "technology entrepreneurship" ($15\times$ in 5.13% of papers).

Fig. 1 2-gram cloud. Source: Authors' own study, generated with worditout.com

Fig. 2 3-gram cloud. Source: Authors' own study, generated with worditout.com

With respect to other identified expressions, they indicate creation of a new business, new product or service using modern technologies and their impact on the economic growth. Two-word expressions indicate references of such publications to broadly
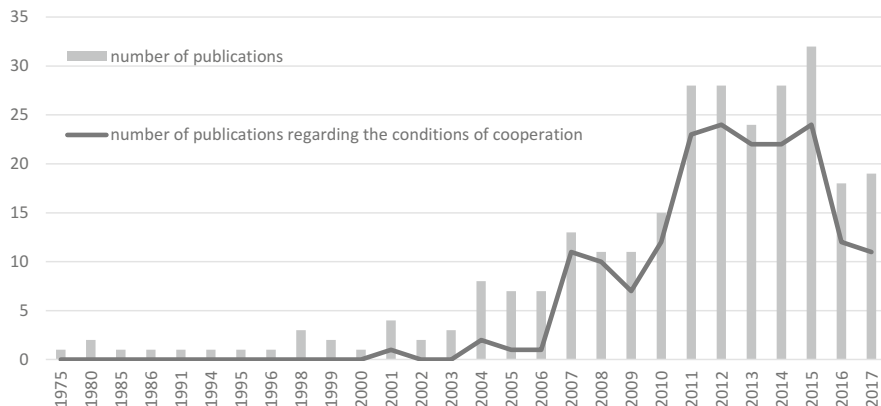
Fig. 3 Chronological presentation of publications. Source: Authors' own study

understood technology entrepreneurship. They contain no information about the
risk, uncertainty, even when analyzing opportunities and threats.

For three-word phrases, the frequency was much lower. It should be emphasized
that the elements from Fig. 1 did not reoccur. The most popular expressions were:
"R&D" (9×, i.e., 3.29% of analyzed papers), "supply chain management" (7× in
2.56% of papers), "supply chain collaboration" (6× in 2.19% of papers). Attention
should also be given to phrases "new product development" (5× in 1.81% of
analyzed papers) and "structural equation modeling" (8× in 2.93% of papers).[2] It
should be emphasized that the occurrences pertain to creation of a new product,
cooperation in the area of R&D, supply chain or relationships being established.
They also indicate that the most frequently used tools for empirical data analysis are
the structural equation models (SEM) and partial least squares (PLS). There are no
phrases connected with risk or uncertainty. One must remember, however, that such
expressions apply to 3% of analyzed papers only.

Bibliometric analysis of publications (Fig. 3) shows an increasing trend in
publications concerning cooperation in broadly understood entrepreneurship. Addi-
tionally, interest in these issues significantly has grown after 2000 and has remained
high ever since. The publications address various trends promoted in the manage-
ment theory, of which mostly frequently mentioned ones are resource-based theory,
strategic management, knowledge management, network management, etc. As the
next step, the literature base was subject to qualitative analysis of contents, which led
to the identification of a group of publications referring to all kinds of cooperation
conditions in entrepreneurship. One hundred and eighty-three publications were
selected, pertaining to cooperation conditions, which accounted for 67% of analyzed
papers. A significant part of publications published after 2006 described conditions
of broadly understood cooperation in the context of entrepreneurship. This means

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[2]The summary occurrences for "structural equation modeling" and "structural equation modeling."

Table 2 Cooperation conditions

Type groups	Cooperation conditions
Cognitive	Experience, intuition, competitiveness
Structural	Structure
Behavioral	Results, goals
Relational	Trust, communication, formalization
Rational	Resources, using an opportunity, environment

Source: Authors' own study based on Wójcik and Czernek (2016)

that cooperation conditions attract increasing interest in literature. The analysis indicated the dominance of qualitative research over quantitative research, which proves that the analyzed topic may still be at the stage of development. The research did not identify the papers concerning cooperation risk.

In an attempt to answer the question: What conditions affect cooperation in entrepreneurship? qualitative analyses of the contents of the publications were performed, and the authors concluded that the conditions included: experience, decision maker's intuition, willingness to take advantage of emerging opportunities, intra-organizational culture, environment, competitiveness, results, goals, trust, communication, formalization of cooperation, owned resources, organizational structure, etc. The identified cooperation conditions were assigned to five type groups indicated by Wójcik and Czernek (2016): cognitive, structural, behavioral, relational, and rational (Table 2).

This stage indicates considerable differences between the conditions and analyzed publications did not address the conditions referring to uncertainty or risk. This clearly shows that there is a lack of publications dedicated to the issues of cooperation risk in entrepreneurship in literature. Thus, the definition of cooperation risk was not identified. Similar conclusion was drawn by Wójcik and Czernek (2016) in their bibliometric study concerning cooperation antecedence, i.e., search for conditions that were conducive to cooperation.

As the last stage of literature research, sectors referenced by the analyzed publications were analyzed. The analysis allowed to confirm the conclusions drawn from the expressions in Fig. 2, i.e., that it applied to technology entrepreneurship, and that dominant companies were production and logistic companies implementing new technologies and promoting R&D, which was also supported by the phrases presented in Fig. 3.

4 Conditions of Cooperation in Entrepreneurship: Limitations and Challenges

The bibliometric study of 273 publications demonstrated an increasing trend as regards the number of publications concerning cooperation in entrepreneurship, particularly after 2000. Sixty-seven percent of the publications concerned the

conditions of cooperation, and their growth in terms of the number of publications was observed after 2006. The analysis of the structure and frequency of publications demonstrated that there is no holistic approach to collaboration conditions in literature; individual papers described only selected conditions and did not provide a comprehensive perspective on the opportunities and threats that cooperation entailed. The researched papers focused on the benefits offered by cooperation rather than on a detailed analysis of the risk it posed. This can be attributed to a multidimensional nature of the problem, the lack of consistency and differences in the perception of cooperation conditions held by individual researchers. Therefore, the silo approach is promoted. In literature, the greatest attention is focused chiefly on researching the results of cooperation and the cooperation's significance in interorganizational relations (Ring et al. 2005; Wójcik and Czernek 2016). Cooperation conditions are a multidimensional concept, which is perceived differently at various levels. It should be noted that cooperation conditions are discussed in the analyzed papers at both the strategic and operational levels. Cooperation-related research performed to date focuses more frequently on the motives underlying the cooperation between two individual entities (Kale and Singh 2009) than on motives for chain cooperation (between three and more enterprises).

A preliminary analysis shows that there are works which address the issue of cooperation conditions in technology entrepreneurship. They indicate that the conditions are primarily determined by the context and the sector in which the enterprises operate. The review shows that more and more research is devoted to cooperation antecedence with a view to defining the factors which drive a decision to enter into cooperation (Wójcik and Czernek 2016). The knowledge of antecedence may offer insight into the reasons why some enterprises operate better than other in the same sector (Hamel 2011), and what kind of collaboration risks they are faced with. Continued research is performed as regards identifying cooperation conditions as seen from the perspective of efficiency and effectiveness, in particular the benefits to be derived by all parties concerned. The subsequent section presents the selected works concerning the conditions of cooperation in technology entrepreneurship in the context of the research questions which had been posed, empirical approach, theory background and results obtained (Table 3).

Considerations concerning cooperation conditions focus on theoretical trends in knowledge management, organizational relations, resource theory, cooperation strategy, and behavioral theory. The research questions pertain to the practical application of a specific research trend. The papers rely primarily on literature reviews, desk research, bibliometrics, longitudinal research, and surveys.

5   Conclusion

The cooperation risk is one of the research areas which calls for further exploration. The subject literature presents cooperation risk identification to a very limited extent, which is predetermined by the context, sector, structure, formalism, experience, and

Table 3 Comparative characteristics of selected papers

Authors	Research question	Empirical approach	Theory base	Key results
Panteli and Sockalingam (2005)	Does knowledge sharing affect trust and conflict resolution during cooperation?	Bibliometric study	Knowledge management, interorganizational relations, theory of trust	Knowledge sharing positively impacts interorganizational relations, provided that the partners display the type of trust which staves off dysfunctional conflicts. Additionally, it was demonstrated that the trust and conflict dynamics are an important success factor in interorganizational agreements. Cooperation is enhanced if partners maintain close relations which facilitate trust and help minimize future conflicts.
Ribeiro-Soriano and Urbano (2009)	Does the efficiency of knowledge depend to a significant extent on the company's capacity to cooperate, both internally (collective entrepreneurship) and externally (collaborative entrepreneurship)?	Desk research	Knowledge management	Cooperation helps businesses to be entrepreneurial and continuously innovative through exploration of new markets. Continuous innovation and exploration of the market builds cooperation. The concept of cooperation in entrepreneurship emphasizes three major dimensions: • strategy—Applicable to a project shared by partners • structure—Applicable to flexibility of structures and adaptation to the surroundings • management—Philosophy applicable to trust.

(continued)

Table 3 (continued)

Authors	Research question	Empirical approach	Theory base	Key results
Alawamleh and Popplewell (2011)	The aim of the research is to show various sources of risk in virtual organizations (VO) and to identify the relations between the sources using the interpretive structural modeling method.	A survey carried out among 234 experts cooperating with international virtual laboratory or Enterprise interoperability. The analysis used (ISM) and MICMAC analysis	Trust in management, safety management	The model developed by the authors offers an opportunity to understand the sources of network risk in VO. It is obvious that the familiarity with the sources of risk is very important, and cooperation affords them another meaning and priority. It means that the parties can mitigate the risk and take action beneficial for all collaborating parties.
Bingham and Haleblian (2012)	How do enterprises learn from their mistakes?	Longitudinal research was used (1992–2003) involving IT, technological, and industrial companies located in Singapore, the USA, and Finland.	Knowledge management, organizational approach to learning	The results confirm that lessons learned from mistakes impact the organization's growth. The authors conclude that it does not matter if negative phenomena are internal or external. Such lessons contribute heavily to developing the logic of accomplishment. The work unveils the factors which drive the organization's learning and highlights the fact that formal communication impacts the business convergence.
Gaba and Bhattacharya (2012)	What are the conditions which make the organizational risk involved in corporate venture capital (CVC) acceptable for decision makers?	Secondary research using a sample of IT companies listed by Forbes 500	Behavioral theory	The authors have concluded that managerial aspirations as regards innovation-related goals affect creation of CVC entities.

| Rindova et al. (2012) | How do new enterprises use partnership in access to resources in order to launch new products? | Induction research The entities were Yahoo and Google (1995–2007) | Interorganizational links in network theory and theory of resources. | The authors show that companies develop a portfolio of cooperation portfolio and recommend various kinds of value creation logic. The logics thus created help generate and maintain various growth and performance efficiency models. |
| Rezazadeh and Nobari (2017) | What strategy of cooperation increases the partners' entrepreneurship? | Survey results from 228 questionnaires completed by managers in automotive parts manufacturing sector | Cooperation strategy | The authors created a conceptual model and verified it empirically. Having done that, they demonstrate that the enhancement of entrepreneurship is the main incentive for cooperation. |

Source: Authors' own study

trust. No papers concerning risk and uncertainty in cooperation were found, although they are indirectly present in the analysis of separate conditions. Additionally, a selective approach to cooperation conditions was identified, which indicates the need for holistic research on cooperation conditions. The research shows that literature on cooperation between organizations is expanded to include the area of entrepreneurship. Moreover, the research indicates that the enhancement of entrepreneurship is the main incentive for cooperation. Additional factors which have impact on cooperation include: effectiveness, knowledge management, cost reduction, commitment, adaptation of organizational structures, proactive approach to communication. Literature shows that entrepreneurial attitude, complementarity, and compatibility have impact on cooperation. However, the papers differ in operationalization of these notions. From the perspective of external factors, essential is the partners' readiness and openness for cooperation by way of defined business opportunities, flexibility in taking and mitigating the risk, business philosophy, organizational culture, decision-making style. Operations managers in companies engaged in cooperation should monitor and assess their efficiency in the area of cooperation. An important aspect of cooperation includes: entrepreneurial orientation (Franco and Haase 2012), trust and mutual commitment (Vazquez et al. 2005), organizational structure (Ribeiro-Soriano and Urbano 2009), knowledge/technology transfer (Blomqvist and Levy 2006), competitive advantage (Vazquez et al. 2005) and innovation (Lassen et al. 2008). This helped to answer the first survey question.

The research provided neither a definition of collaboration risk nor a reply to the question whether literature defined the collaboration risk. The fact that no such definition was offered in the 273 publications does not mean that no such definition exists in literature. No two- or three-word phrases including "risk" were found in the publications subject to research, and "risk" as a single word appeared in 19 publications only, whereas the word "uncertainty" was nowhere to be found. So far researchers have made no attempt to identify the mediators and motivators of the influence of collaboration conditions upon its consequences or effects. The constraint of the research consisted in narrowing the search to two databases containing indexed publications, and in the authors' subjective perception, oriented on identifying the collaboration risk.

References

Alawamleh, M., & Popplewell, K. (2011). Interpretive structural modelling of risk sources in a virtual organisation. *International Journal of Production Research, 49*(20), 6041–6063.

Beckman, C., Eisenhardt, K., Kotha, S., Meyer, A., & Rajagopolan, N. (2012). Technology entrepreneurship. *Strategic Entrepreneurship Journal, 6*(2), 89–93.

Bingham, C. B., & Haleblian, J. (2012). How firms learn heuristics: Uncovering missing compo-
nents of organizational learning. *Strategic Entrepreneurship Journal, 6*(2), 152–177.

Blomqvist, K., & Levy, J. (2006). Collaboration capability – a focal concept in knowledge creation
and collaborative innovation in networks. *International Journal of Management Concepts and
Philosophy, 2*(1), 31–48.

Deutsch, S., Schrammel, J., & Tscheligi, M. (2009). Comparing different layouts of tag clouds:
Findings on visual perception. In M. Pohl (Ed.), *Human aspects of visualizations. Workshop on
human-computer interaction and visualization* (pp. 23–37). Uppsala: Springer.

Franco, M., & Haase, H. (2012). Interfirm alliances: A collaborative entrepreneurship perspective.
In *Entrepreneurship-creativity and innovative business models* (pp. 115–138). Rijeka: InTech.

Gaba, V., & Bhattacharya, S. (2012). Aspirations, innovation, and corporate venture capital: A
behavioral perspective. *Strategic Entrepreneurship Journal, 6*(2), 178–199.

Halvey, M., & Keane, M. T. (2007). An assessment of tag presentation techniques. In *WWW 2007
Proceedings of the 16th international conference on World Wide Web*, Alberta, Canada,
08–12 May 2007 (pp. 1313–1314). New York: ACM Press Banff.

Hamel, G. (2011). First, let's fire all the managers. *Harvard Business Review, 89*(12), 48–60.

Kale, P., & Singh, H. (2009). Managing strategic alliances: What do we know now, and where do
we go from here? *The Academy of Management Perspectives, 23*(3), 45–62.

Kuratko, D. F., Hornsby, J. S., & Covin, J. G. (2014). Diagnosing a firm's internal environment for
corporate entrepreneurship. *Business Horizons, 57*, 37–47.

Lassen, A. H., Timenes Laugen, B., & Middel, R. (2008). Collaborative entrepreneurship: On the
influence of internal and external collaboration on corporate entrepreneurial innovation. In: *9th
International CINet conference: Radical challenges in innovation management* (pp. 530–543),
Valencia, Spain, 7–9 September 2008.

Le Roy, F., & Czakon, W. (2015). Managing cooperation: The missing link between strategy and
performance. *Industrial Marketing Management*. Accessed June 22, 2017, from https://doi.org/
10.1016/j.indmarman.2015.11.005

Machnik-Słomka, J., & Kordel, P. (2016). Significance of technological entrepreneurship and
creativity in metallurgical enterprises. *Meta, 55*(4), 855–858.

Matyjas, Z. (2015). Tendencje rozwojowe zarządzania strategicznego w świetle badań
bibliometrycznych [Trends in the development of strategic management in the light of
bibliometric research]. *Marketing i Rynek [Marketing and Market], 9*(CD), 363–377.

McMullen, J. S., & Shepherd, D. A. (2006). Entrepreneurial action and the role of uncertainty in the
theory of the entrepreneur. *Academy of Management Review, 31*(1), 132–151.

Mühlböck, M., Warmuth, J., Holienka, M., & Kittel, B. (2018). Desperate entrepreneurs: No
opportunities, no skills. *International Entrepreneurship and Management Journal, 14*, 975–
997. https://doi.org/10.1007/s11365-017-0472-5

Nielsen, B. B. (2011). Trust in strategic alliances: Toward a co-evolutionary research model.
Journal of Trust Research, 1(2), 117–129.

Panteli, N., & Sockalingam, S. (2005). Trust and conflict within virtual inter-organizational
alliances: A framework for facilitating knowledge sharing. *Decision Support Systems, 39*(4),
599–617.

Rezazadeh, A., & Nobari, N. (2017, August). Antecedents and consequences of cooperative
entrepreneurship: A conceptual model and empirical investigation. *International Entrepreneur-
ship and Management Journal, 9*, 1–29.

Ribeiro-Soriano, D., & Urbano, D. (2009). Overview of collaborative entrepreneurship: An inte-
grated approach between business decisions and negotiations. *Group Decision and Negotiation,
18*(5), 419–430.

Rindova, V. P., Yeow, A., Martins, L. L., & Faraj, S. (2012). Partnering portfolios, value-creation
logics, and growth trajectories: A comparison of yahoo and Google (1995 to 2007). *Strategic
Entrepreneurship Journal, 6*(2), 133–151.

Ring, P. S., Doz, Y. L., & Olk, P. M. (2005). Managing formation processes in R&D consortia.
California Management Review, 47(4), 137–156.

Shane, S., & Venkataraman, S. (2003). Guest editors introduction to the special issue on technology entrepreneurship. *Research Policy, 32*(2), 181–184.

Short, J. C., Ketchen, D. J., Shook, C. H. L., & Ireland, R. D. (2010). The concept of opportunity in entrepreneurship research: Past accomplishments and future challenges. *Journal of Management, 36*(1), 40–65.

Thomson, R., & Webster, E. (2013). Risk and vertical separation: The case of developing new technology. *Oxford Economies Papers, 65*(3), 653–674.

Vazquez, R., Iglesias, V., & Álvarez-gonzález, L. I. (2005). Distribution channel relationships: The conditions and strategic outcomes of cooperation between manufacturer and distributor. *The International Review of Retail, Distribution and Consumer Research, 15*(2), 125–150.

Wójcik, D., & Czernek, K. (2016). Antecedencje współpracy przedsiębiorstw w sektorze turystycznym – Wyzwania badawcze [antecedents of cooperation of enterprises in the tourism sector - research challenges]. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu [Scientific works of the University of Economics in Wroclaw], 421*, 632–644.

Part III
Marketing

Student Evaluations of Teaching at the University: Perceptions and Questionnaires

Iwona Staniec and Jacek Jarczyński

Abstract The collection of questionnaire data, the definition of standards referring to the interpretation of the results, and taking the context in which the data is collected into consideration constitute holistic systems of evaluation. Higher education institutions utilize questionnaires in which students evaluate a given teacher or a given course unit. Does this mean that they possess evaluation systems that can assist them in taking decisions? In this paper, attention is paid to issues related to the number of questionnaires which are returned, to motivation and the reliability of evaluation as well as to the structure of the questionnaire through which research is conducted. On one hand, questionnaires submitted by students provide a lot of information. On the other hand, they cannot always be used in the management system due to the low level of the response rate and a lack of reliability. In this research it is shown that higher education institutions do not use traditional methods in order to increase the response rate or motivation level. Students as evaluators are not ready to provide constructive feedback.

Keywords Evaluation · Questionnaire data · Response rate · Results of evaluation questionnaire

1 Introduction

The increasing popularity of evaluation questionnaires results from the necessity to check levels of satisfaction since organizations that want to succeed realize how important are the expectations of clients—including the way service is perceived, thus organizations see the defining of the customers' level of satisfaction as a

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necessity (Patton 1990). Sometimes—as is the case in Poland—higher education institutions have a legal obligation to evaluate performance. In the case of Poland this is mandated by Article 32 of the Law on Higher Education Act of 27 July 2005. Thus, such evaluations must be conducted in such a way as to comply with this rule. Kennedy (2009) points out that in order to evaluate the quality of education the evaluation of the didactic process is important. From the theoretical point of view this means a detailed analysis of teaching methods including both the professional and didactical preparation of teachers. In this chapter, evaluation research conducted in the sector of higher education will be presented with a special attention paid to evaluation questionnaires filled in by students in Polish higher education institutions. Polish higher education institutions are not very advanced in implementing systems of evaluation; however, they do use questionnaires in which students evaluate the academic teachers or course units. These higher education institutions work on the standards for the interpretation of the collected data and take the context in which the data is collected into consideration.

The aim of the conducted deliberations is to detail the disadvantages and advantages of elements of evaluation questionnaires that are applied in higher education institutions. In keeping with this proposed aim, the following research questions were formulated:

1. What is the response rate for evaluation questionnaires?
2. Which factors determine the fact that the questionnaires are filled in or not?
3. What are the characteristics of evaluators and of those who fail to evaluate?
4. What motivates students to fill in evaluation questionnaires?
5. How do the evaluators perceive the structure of the questionnaire?
6. Do the results of evaluation questionnaires allow their teacher's work to be evaluated in a reliable way?

2 Materials and Literature Overview

2.1 Process of Evaluation

Al Issa and Sulieman (2007), Yang (2009), and Balam and Shannon (2010) take note of the pressure existing concerning the evaluation by participants of the education process of the work of academic teachers. This necessity derives first of all from the compliance rule and also sometimes from complaints and opinions which influence the reputation of a higher education institution. Secondly this necessity arises from the possibility of making managerial decisions on the basis of the evaluation questionnaires. Evaluation is an integral element of management by objectives and leads to a transparent and effective management system. It allows the introduction of improvements by means of implementing feedback. The increase of quality, coherence and effectiveness of impact are the basic aims of every evaluation. Therefore, the questionnaire evaluation constitutes the basic tool, which allows the monitoring

and controlling of the work of academic teachers. It allows the checking of its compliance with the adopted standards, the effectiveness of the undertaken activities and the implementation of the stakeholders' expectations. According to Patton (1990), it also plays an informative role—its results are used to obtain information on the attitude of the teacher and it allows to check how a teacher fulfills his or her duties and to verify the undertaken activities. The evaluation is a specific kind of research, which serves to identify all the possible factors that can have an impact on the level of a customer's satisfaction with a provided service. Each service provider must aim at creating a proprietary and a unique service concept in order to increase the quality of the delivered services to the broadest extent possible and thus to satisfy the needs and expectations of clients.

White (1998), Lynch (2003) and Peacock (2009) claim that the promotion of evaluation in the education sector will increase the responsibility of a higher education institution toward such stakeholders as students or teachers. It is worth noticing that the introduction of evaluation questionnaires in higher education institutions has changed the relational position of academic teachers and students since they evaluate one another. As is shown by Michałowicz (2016), the difference is that academic teachers give grades in a public way and must justify them in order to fulfill the rule of compliance. In turn, students evaluate academic teachers in an anonymous way without taking responsibility for the formulated opinions and understanding what its results can be. According to evaluation terminology (Scriven 1967), in a higher education institution one deals with a formative evaluation (often referred to as a shaping, constructive, or a current one) or with the conclusive (summing up) evaluation. In the formative function, the evaluation is used to improve and to ensure the progress of the current activities (e.g., study programs, courses, projects), and to support people participating in the current activities or undertakings. In the conclusive function, the evaluation serves to support reporting, awarding certificates, and undertaking selection. In evaluation research, attention is paid to two subprocesses (Golmohammadi et al. 2014). The first subprocess is a tool approach—which encompasses the technical side of the service, e.g., classes in computer rooms, audio-visual rooms, and projects in real companies. The second subprocess is an expressive approach—which refers to the psychological aspect of providing a service and thus any extra impressions a student may have resulting from the process of the service delivery, e.g., feedback, roleplaying, visual impressions, and creating relationships. In the tool approach, the student evaluates not only the result but also the organization of the service process, and thus a necessary condition to achieve a satisfactory result, however not sufficient overall. When the expressive approach does not support their expectations, then the student will feel dissatisfied with the service. That is why, from the point of view of a higher education institution, it is important to define the factors which decide about students' satis-faction, define the programs which enable the effective implementation of quality from the point of view of the objective and to develop ways of measuring satisfaction in order to undertake corrective activities (Hassan et al. 2016).

In research on evaluation the following elements are relevant (Grohmann and Kauffeld 2013): the research process itself, the reliable and conscious construction of

research tools (questionnaires), the measurement of clients' satisfaction by means of the proper tools, a proper analysis of the statistical data and a process of application conducted in a smart way. At each of these step it is possible to make a lot of mistakes, which can cause that the obtained results might be a distortion of reality (Dimitriades 2006). The most widely used techniques in evaluation include (Darling-Hammond et al. 1983):

- Questionnaire interview or a free interview—respondents give their answers in an eager and very detailed way. The high cost and what is known as interviewer error are the disadvantages of this technique.
- Audit questionnaire—provides a possibility to address a lot of respondents in a short time. Thanks to anonymity, the honesty of answers is ensured. A lack of complexity and a necessity to gather a lot of respondents in one place are the disadvantages of this method. The response rate is the advantage—everybody who is gathered responds.
- Online questionnaire—an electronic questionnaire that is placed on the website or in the system. The advantages: low cost, quick realization, a possibility to use symbols, and to play audio and video materials. The response rate is the disadvantage.

2.2   Response Rate

The response rate is a problem in evaluation. Its high level is desirable (Bogdan and Biklen 2007). The response rate is calculated in an individual and collective way. For a higher education institution, it is defined by how many questionnaires out of the total number sent out were filled in, for a course unit (concerning an academic teacher)—how many students out of those who received the questionnaires filled them in. Sometimes the response rate can be also treated as a characteristic of a student or an academic teacher—then the questionnaires filled in by the same student or for the same employee in the different periods of time are combined. The experience of research agencies confirms that the response rate is always higher in internal than in external evaluations. The internal evaluation generally has a response rate of 30–40% while the external evaluation rate is 10–15%. Research confirms that the difference in these levels results from the motivation to participate in the evaluation. The response rate can go up to 85% point, when the population of respondents is motivated and the form of the questionnaire does not discourage its completion. The response factors can also go down by at least 2% points when the respondent is not motivated or their motivation is weak.

Hyman and Yang (2001) show that the response rate in international marketing journals (IMJ) equals 40.00%. Additionally it was mentioned that the response rate in questionnaires using surveys in international publications differs from 27.4 to 51.2%. Yang et al. (2006, p. 604) showed that audit questionnaires have the highest response rate (51.2%) followed by phone interviews (45.2%), direct interviews

(36.6%), and questionnaires sent by e-mails (27.4%). The lack of monitoring is the basic reason for a low response rate. According to Dillman (2000) and Duarte (2014), reminding the respondents is a common practice in order to increase the response rate. It should be done from two weeks up to one month after sending an e-mail message. Less than two weeks does not give enough time for people who would like to react but due to time constraints need more time to do so. Michałowicz (2016, p. 123) shows that the response rate for internet evaluation questionnaires over the course of three semesters depended on the evaluation. The highest response rate (65%) was obtained in research with reminders sent referring to filling in the questionnaires and was the effect of pressure stating that if the student does not evaluate at least 50% of the course units in which they participated, they will not be able to enroll to the courses in the following semester.

The research (Dillman 2000; Duarte 2014; Michałowicz 2016) does not show what influenced the response rate level—the reminders or the pressure. The effect of pressure was unlawful since the law states that it is not obligatory to participate in evaluation questionnaires in higher education institutions. In evaluations in which no reminders were used, the average response rate dropped to 30–40%. Cook et al. (2000) and Nulty (2008, pp. 302–303) show that in the case of evaluations at higher education institutions, the response rate is always higher for paper questionnaires than for the electronic ones. Nulty (2008) suggests that a low response rate in evaluations in higher education institutions results from the lack of understanding by the students of the importance of feedback and a lack of awareness that their opinions will actually be used.

Shettle and Mooney (1999) argue that it is not only the technique which matters but also that the choice of the applied scales can have an influence on the lack of answers, the errors which appear and the response rate. Michałowicz (2016, pp. 143–147) confirms in his research that:

- The response rate does not depend on the fact whether the course unit is obligatory or not.
- In treating the response rate as the characteristic of the evaluator, he pays attention that in the case of an evaluation with reminders and with an element of pressure, the largest group of evaluators (38.7%) filled in all the questionnaires. In the evaluations without extra reminders and pressure, groups of students who did not fill in any questionnaires (45.8 and 53.5%) dominated.
- There is a decreasing tendency from one period to another in a group of evaluators.
- The average grades of those who did not fill in any questionnaire is in every evaluation lower than in case of those who filled in all of the questionnaires.
- The evaluators show a tendency to choose for the evaluation those course units from which they had better grades and often or always fill in a questionnaire when they received a bad grade.

2.3 Likert Scale

The Likert scale is the most commonly used scale in evaluation questionnaires in higher education institutions (Likert 1932). The Likert scale is a regular, bipolar interval scale measuring attitudes and beliefs. The bipolarity means it has two opposite poles and at the end of the scale there are opposite beliefs. The intervals mean that the following points of the scale are placed in order and the distance between them is equal. It is assumed that the number of the possible options should be odd in order to make the middle statement a neutral one (that is: it is difficult to say, I have no opinion, I do not know) (Matell and Jacoby 1971). The Likert scale is an order scale when the neutral possibility is placed in the middle of the scale. If the neutral option is placed at the end, it loses the properties of the order scale. The universality of the Likert scale results from the possibility to use it for a creation of easy indexes (Cox 1980). When constructing the Likert scale, it is important to evaluate the answers of respondents and maintain symmetry in evaluating: there is the same number of scales on both sides—both the positive and the negative ones.

The most popular Likert scale that is currently applied is a 5-point variation (Shaw and Wright 1967). Despite the existence of the error of central tendency—a cognitive mistake which means a reluctance to point at the extreme answers on the scale, there exists the risk of obtaining many neutral answers. In the literature (Cox 1980; Messick 1989), one can find a remedy for the increased inclination to point at the elements in the middle of the scale, namely the introduction of an imposed choice that is a scale with an even number of elements which makes it necessary to take a decision concerning an approach to a given statement without a possibility of remaining in a neutral position. Its disadvantage is the lack of a possibility to fill in the scale for respondents who do not have an opinion on the given question. Statisticians encourage the use of a more than 5-level scale due to the fact that it is possible to use the methods of analysis envisaged for a ratio scale and to increase the accuracy of measurement (Matell and Jacoby 1971). Therefore, it must be remembered that a big range in the scale influences in a negative way the proper perception of the single values of the position by the respondents. In the literature a smaller number of categories based on two or three values is considered insufficient (Cox 1980). Each of the variations of the Likert scale has both advantages and disadvantages and their application causes a certain risk. Regardless of the option on the scale, it must be remembered that the questions, which are formulated in the correct way, are key to a good questionnaire and that the choice of a scale is of minor importance due to the respondents' capacity to distinguish between the different variations of answers. In the works of Wang and Wilcox (2006), Saks and Burke (2012), and Grohmann and Kauffeld (2013), 5-level Likert scales were used.

2.4 Conditions of Evaluation

In a publication in *The Economist* (2016), where an analysis of the evaluation of academic teachers done by anonymous persons was conducted (see the portal: http://www.ratemyprofessors.com), it was shown that students appreciate lecturers who are gentle and who speak in an interesting way. They underestimate those who are strict and boring. This is also confirmed in research by Michałowicz (2016, p. 143), who showed that questions in the questionnaires are correlated and they constitute one factor and thus it is possible to build indicators which average the answers Therefore, a lecturer who is perceived by a student as friendly is also said to be the one, which presents the material in a clear and comprehensive way. According to Michałowicz (2016), the results of evaluation questionnaires do not allow for the evaluation of the work of lecturers because:

- They are not reliable—he considered the constancy of the answers over time in the context of reliability and asked for the average from the last semester—he pointed out that at least 20% of evaluators, on average, change their opinion in the filling in of successive questionnaires, even with one approach to evaluating a few course units.
- The ranking of arithmetic means is used, ignoring the information on the basis of which data the average was calculated and from what number of questionnaires and at what differentiating scores, e.g., in the conducted evaluation, 44 out of 723 lecturers did not significantly differ from the leader in the ranking.
- The very same lecturer teaching the same course unit obtains different evaluations from different groups of students, which shows that the evaluation of the didactic process does not depend only on the skills of the lecturer but also on the group of students.
- Thirty-six percent of course unit students who obtain good marks give a better evaluation of the classes.

3 Methodology and Results

3.1 Comparison Analysis

In the first stage of the analysis a comparative analysis of evaluations done in Polish higher education institutions was conducted. According to the adopted methodology, the areas in which the comparisons were made are: the applied research method, the period of making the questionnaires available, promotion, anonymity, the frequency of filling in by a given student, extra bonuses or encouragements, the length of the questionnaires, the scale which is used, and opinions about the questionnaires. In order to choose the higher education institutions for the comparative analysis, the website of every public higher institution was examined and only those were chosen whose websites made information available on evaluation questionnaires. Finally,

the analysis was conducted at 8 out of 41 functioning higher education institutions: the University of Warsaw, the Wroclaw University of Science and Technology, the AGH University of Science and Technology, the Poznan University of Technology, the Medical University of Lodz, the Jagiellonian University, the Lodz University of Technology (TUL), and Jan Kochanowski University in Kielce (JKU). The choice of higher education institutions was based on the availability of information. In the process of evaluation in the analysed higher education institutions, partial evaluations are conducted. Only the Medical University of Lodz conducts a full evaluation.

The deans choose the course units at the selected faculties, which are to be evaluated in a given semester. The number of the course units to be evaluated, the choice of the lecturer and the method of making such a choice are defined by a Rector's Decree. At the AGH University of Science and Technology, a student gets, during every semester, at least one course unit and one academic teacher to evaluate. At the Poznan University of Technology, the system is constructed in such a way that each academic teacher is evaluated at least once during 3 years. At the remaining higher education institutions, the respective deans take decisions concerning evaluations. Such evaluations are done utilizing the technique of an online questionnaire (online evaluation) using a specially prepared questionnaire. Earlier, the form of auditory surveys was applied but this form has now been completely abandoned by higher education institutions. Participation in the evaluation due to the compliance rule is not obligatory. Evaluations are conducted every semester. The questionnaires are launched one month before the session and are closed together with the end of the semester. The only exception is the Medical University of Lodz where the surveys are launched at the beginning of the semester and the students have access to them until the end of the semester. The second exception is the Lodz University of Technology at which the questionnaires are launched at the beginning of the exam period and closed in the second week of the next semester. The evaluations conducted at each higher education institution are anonymous. The information is anonymized at the level of the collected data. In the promotion of the evaluation, information available on the website is used together with posts on Facebook (besides UJK), posters in university buildings and emails informing about the evaluation together with the teachers to be evaluated.

The Poznan University of Technology and the Lodz University of Technology also engage the Student Unions to encourage participation in the evaluation process. The Poznan University of Technology organizes an information stand presenting the questionnaire and information on how to fill it in and why. AGH, two weeks before the closure of the questionnaire system, sends reminders to fill them in. The Lodz University of Technology includes an incentive that if 40% of the students from a given year fill in the surveys, the students will be able to decide who will be evaluated in the next semester amongst all the lecturers and course units. At the same university, in its regulation of the evaluation process, grants for the most active faculty are envisaged and the rankings of groups and fields of studies—taking into consideration the response rates—are published. The Jagiellonian University distributes vouchers for books among the most effective evaluators. The University of Warsaw sends additional reminders to students. Generally the heads of a unit make
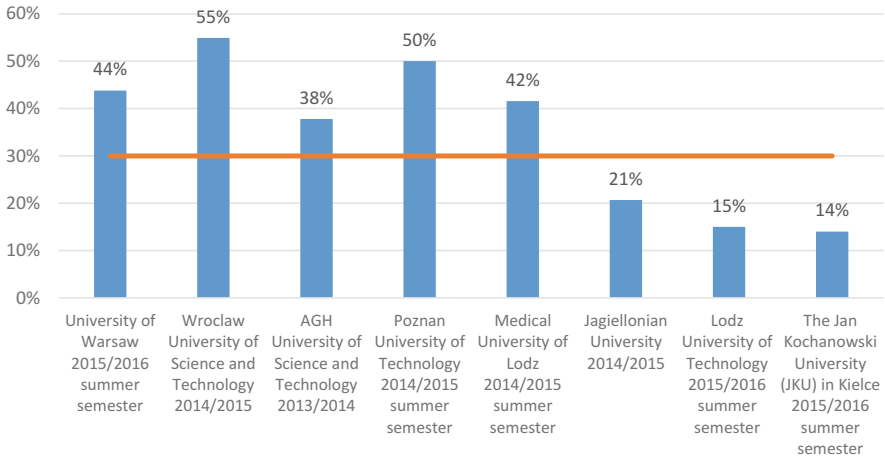
Fig. 1 Response rate at different universities. Source: Authors' proprietary desk research

the results of the questionnaires available for academic teachers. The University of Warsaw publishes aggregated results and takes the evaluations of students into consideration in an employee's evaluation on condition that the response rate was at least 30%. In all the questionnaires, a 5-level Likert scale is used. As far as the length of the questionnaire is concerned, it has 8–10 closed questions accompanied by 2–3 open questions. The University of Warsaw has the shortest questionnaire, which consists of five questions. The longest questionnaire is at UJK. Generally the opinions of students, besides the ones from UJK, state that the questionnaires are not too long and comprehensive though they also include questions that can be eliminated.

Figure 1 shows that there are significant differences between higher education institutions as far as the response rate is concerned although due to the matter of availability the data comes from different periods. Three of them do not reach the requested threshold of 30% and three exceed it. The universities, which exceed the required threshold, are characterized in the conducting of their evaluation questionnaires by:

- The possibility to evaluate every academic teacher and visible changes in the attitude of the academic teachers after negative evaluations—Medical University.
- An action to send out reminders—AGH, University of Warsaw.
- Information campaign—Poznan University of Technology.
- Grants as rewards for the most effective evaluators—Wroclaw University of Technology.
- Feedback—University of Warsaw.

3.2 Results from Interviews with Students

In the second step of research, in order was to identify the resistance of non-evaluators and to deepen the opinion of evaluators, 50 twenty-minute interviews were planned at each of higher education institutions at which the authors of this paper work. The interviews were conducted according to a scenario prepared by the members of the research team (the authors plus the members of the PBL group), which guaranteed the proper quality of the material gathered during the interviews. Students were interviewed in a targeted manner using the snowball effect. The interviews were conducted in the period from March until May 2017. The pollsters recorded each interview—with the consent of the respondent—on a dictaphone or, when a respondent did not agree to have the interview recorded, the pollster would write the answers down. Transcripts from the conducted interviews were prepared. This source material was subject to analysis directed toward the search of regularities in the information obtained during the research.

Within the qualitative analysis a selection and categorization of the obtained material was done according to certain regularities, the notions which appear most often, the definitions used, and the analysis of causal relationships between the indicated categories. On their basis conclusions and recommendations were formulated in the final stage. The deepened interviews were conducted with the participation of 123 current students—72 from TUL and 51 from the Piotrkow Trybunalski branch of UJK. Among the respondents, 50.4% (62 students) had never filled in any evaluation questionnaires at the university and 49.6% (61 students) had done so. Therefore, the opinions of 62 non-evaluators and of 61 evaluators were examined. There are statistically important differences between the higher education institutions in terms of the percentage of the students who fill in questionnaires ($p = 0.2251 > 0.05$) and those who do not fill them in ($p = 0.2251 > 0.05$). There are, however, no significant differences in the percentage of students who fill in the surveys at TUL ($p = 0.3516 > 0.05$) and UJK ($p = 0.1259 > 0.05$). The students who do not fill in the evaluation questionnaires gave the following explanations:

- A lack of a possibility to fill the questionnaire which means it did not reach a given student—it is worth noticing that this results from a systemic mistake of an evaluation that the questionnaire is not addressed to every student in a given semester (the respondents are students from different semesters, years and fields of studies); there were also the complaints of students that they were supposed to evaluate at the same time several academic teachers (e.g., 5 or 6) and several course units and that they were tired of the process.
- A lack of understanding of the necessity to fill in the surveys—they explained this reason when mentioning the lack of information on the visible effects of the evaluation—it seemed to them that nobody has read and analysed the results so they were not aware why they were supposed to fill them in and for whom they are useful.

Table 1 The reasons mentioned by students why they did not want to participate in the evaluation process

Reason	TUL	UJK	Total
Lack of questionnaires to be filled in	9	14	23
I do not feel the need	12	5	17
Lack of time	11	5	16
Lack of knowledge on the existence of the questionnaire	3	5	8
Lack of willingness	4	3	7
There was no teacher I wanted to evaluate	5		5
Total	44[a]	32[a]	76[a]

Source: Authors' proprietary preparation
[a]Sometimes the students gave a few reasons and that is why the number of answers does not equal the number of evaluators

Table 2 Sources of information on the process of evaluation

Source of information	TUL	UJK	Total
University system	29	9	38
Friends, colleagues	20	14	34
Academic teachers	6	10	16
Students union	9	0	9
E-mail	8	0	8
Facebook	7	0	7
Leaflets, posters	2	2	4
Total	81[a]	35[a]	116[a]

Source: Authors' proprietary preparation
[a]Sometimes students gave a few reasons and that is why the number of answers does not equal the number of evaluators

- A lack of time—they expressed here reluctance as they preferred to devote this time for pleasure, though they stated in the final stage that this was a tactical excuse.

All the aggregated reasons mentioned in the interviews are presented in Table 1.
The following part tried to understand where students obtain knowledge about the evaluation. The internal ICT system was the most common source—here there is a significant difference between the universities as UJK in was mentioned only in third place after information from colleagues and friends and requests from academic teachers. At TUL, the information system dominated concerning information on the evaluation followed by information from colleagues. Detailed information on the source of information is presented in Table 2.
Among the significant differences between higher education institutions, the approach of academic teachers at UJK should be mentioned as they inform the students much more often about the possibility and necessity of evaluation questionnaires and the approach of students to the university system—at TUL they work with such questionnaires on a daily basis and at UJK they use it only from time to time. In addition, it is clear that TUL uses social media to inform about evaluation

activities, which is not the case at UJK. What is more, TUL engages the Students' Union to promote evaluation activities, which is not the case at UJK. It should also be noted that students do not pay attention to promotion activities in the form of leaflets and posters and even if they see them they do not associate them with a specific activity and they did not pay attention to them. In the conducted interviews, the students paid attention to the fact that it was important for them to be encouraged to fill in the questionnaires by the academic teachers. They think that the academic teachers should themselves inform them about the possibility to participate in the evaluation—in the analysed higher education institutions, this it is more common at UJK than at TUL (another important difference in the approach of the universities). It is also possible to notice the regularity that students who were informed about the evaluation questionnaire by an academic teacher filled them at a 100% rate. It proves that academic teachers are not only the source of information but also of motivation to participate in the evaluation process. The students also indicated in the research that sums of money dedicated to charity together with the activities, which were the results of the conducted evaluations, also encouraged them to participate. For students the feedback information in the form of an index or some ranking that did not appear at any of the universities was also very important (mentioned by 1/3 of the respondents).

At TUL during the year when the research was conducted, there were intense promotion activities in the form of posts published on Facebook, information provided by the Students' Union and a reward for the best group evaluators. This has caused that the response rate increased to the level of the required 30%. However, the promise was not kept and the ranking by the evaluators of the best group of teachers or course units was not published and so there was a permanent lack of feedback. The students who filled them in did the evaluation of the questionnaire itself. It is worth remembering that every university has a different questionnaire so there were evaluations of the different questionnaires. Generally students from TUL (31 out of 39) thought that the presented questionnaires (there are separate questionnaires to evaluate academic teachers and course units) are acceptable as far as the number of questions are concerned. Some of them (2 out of 39) thought that there were too many open questions (they rarely filled them in). Six out of 39 respondents think that this kind of questionnaire does not properly evaluate the course unit or the academic teacher but they did not have an idea of how this evaluation should look like. The students of UJK think that the questionnaire has too many questions (15 indications out of 22) and they think that a shorter questionnaire would make it more comprehensive and they would be more eager to fill it in.

As far as the scales used are concerned, in the case of both universities for the closed questions a 5-level Likert scale was used with a neutral point in the middle. However, the description of the scale was different since at TUL the scale is as follows: 1—definitely not and 5—definitely yes. On the other hand, at UJK 1 means a lack of satisfaction and 5 a very good mark. The students of UJK (19 out of 22 respondents) think that the scale which is used is not correct but they are unable to indicate which scale would be good. Three respondents had no opinion on the scale.

Among the students of TUL, 11 stated that the scale used in the questionnaire is correct and the remaining ones (28 respondents) that this was not the case. Only 5 of them defined what in their opinion could be improved. One of them thinks that in such evaluations only open questions should be used, two propose to use a 7-level or 10-level scale, one only a 3-level scale and one a usage of an even scale without a neutral position. The remaining students did not have any proposals as far as the evaluation scale is concerned.

As far as the content of the questions is concerned, the students of TUL think that the questions are comprehensive but sometimes too general or not relevant from the point of view of the student. Ten students stated there was no place for their recommendations and opinions. Students of UJK think that the questions are difficult and not comprehensive for the student. They think they are not clear and that they are not asked about their feelings. Students of TUL underline that they know the survey is anonymous but they do not feel so since it is possible to identify an evaluator with the usage of the IT system. However, in the current state of cyber society, this did not represent a problem for them and thus they did not care if it was not anonymous. In the majority of cases they declared that they would also fill in the survey even if it was not anonymous. The students of UJK underline that they feel anonymous and they have no doubts about it.

Twelve students—six from each university—state the results of the question-naires should not be published. The remaining ones state that the results should be published. However, 43 of them underline that only the general results should be published, the ranking of course units or academic teachers or some special indica-tors or indexes should be prepared in order to make the feedback more clear and transparent. There is a clear advantage of the approach requiring feedback informa-tion at both universities. Students, regardless of the university, agree that a discus-sion by a head/dean with the evaluated academic teacher should constitute the consequence of the evaluation and if necessary it should be accompanied by a meeting with students. Students do not see this happening and thus their motivation is weaker every semester. They expect that such a conversation should lead to a change in the way of conducting a given course unit, to its evaluation, to the matter of communicating, to a change in clothes and so on. The students in the analysed universities do not see this happening and that is why they think that nobody uses the results of the evaluation and that they are not treated seriously. The students of TUL mention the example of the Medical University of Lodz where in their opinion the approach to evaluations is really reliable and that students after one semester notice the differences, which is the consequence of their evaluation. They think that these results should motivate the academic teachers to work on their attitudes to the teaching content and to their approach to students. It is surprising that despite such an approach, students do not want the competition for the best academic teacher to be based on the results of the evaluation questionnaires. The most popular academic teacher at TUL is until now chosen via online voting. They think these are two different approaches and that the competition is a yearly tradition.

An overwhelming number of students (45 out of 61) think that such an evaluation is needed. They state that the academic teacher should get a feedback on their

approach to teaching and concerning the course unit. Seven evaluators do not have an opinion on the need for student evaluation questionnaires and nine state they are not useful. They justify this by means of the lack of reactions to their opinions. There are no differences in the opinions of students on the usefulness of such questionnaires in the analysed higher education institutions. At this moment, students of TUL get access to evaluation questionnaires at the beginning of the exam period and for the first two first weeks of the following semester. Students confirm that this way of making the questionnaires available is good for half of the respondents. The second half of them would prefer them to be available two to four weeks before the end of the semester. This is particularly important in the summer semester when the more than a three-month break causes that many details that would normally appear in the evaluation are not present. A part of them think that the questionnaires should be available immediately after the end of the course unit even if the course unit finished in the middle of the semester.

Here a problem of a methodological nature appears since in the questionnaires there are questions on exams, which for some course units are organized during the exam period. UJK opens the system of evaluation one month before the exam period. This timeline is approved by the students. The students suggest that the possibility to choose which academic teacher or which course unit from a given semester they would be able to evaluate would be one of the motivators to participate in the evaluation. They state it perhaps it should obligatory to fill in three questionnaires per semester. Definitely, those who want so, should be able to fill in more questionnaires. They think that three is an optimal number in order to be objective. Students of TUL underline that students of the Medical University of Lodz have such an opportunity and that they like it very much. In the research, 63% of students confessed that they often fill in the questionnaire when they obtain a bad grade and want to punish in this way the academic teacher. Students do not pay attention to the positive aspect of such grades. They perceive the questionnaire in a negative way, namely that it is as a tool to show what is wrong.

4   Conclusions and Discussion

Evaluation questionnaires in higher education are very important elements of internal quality systems and they allow a student to evaluate a given course unit and the way it is delivered by a given academic teacher. The low level of response rate is an identified problem in the current system of evaluations. Therefore, the evaluation cannot fulfill a summative function, which is, e.g., the evaluation of the work of an academic teacher. The low level of response rate cannot be disqualifying when the evaluation is supposed to play a formative role. Taking for granted that the information comes only from people who would like to help to raise the level of teaching, the result of the evaluation research with such a low response rate is treated as a diagnosis of the current situation and when there are no reactions more direct research techniques are applied.

Without these additional activities, the evaluations of course units and the grades of students are not sufficient in creating a ranking of the evaluation systems. This is confirmed by Patton (1990). The analysed universities, as was shown in the works of Cook et al. (2000) and Nulty (2008, pp. 306–308), have to struggle with a decrease of the response rate when turning to the use of online questionnaires. Additionally the effects of tiredness appear, as students of the higher years tend to fill in the questionnaires more and more rarely. Therefore, the aspects of relations between a student and an academic teacher and a student and a higher education institution are very important together with awareness of the importance of such elements which this evaluation brings into the system of University management. The presented research confirms the opinion of Nulty (2008) that a low level of response rate in the evaluation questionnaires results from the lack of understanding of the role of constructive criticism and a lack of information on feedback activities. In this aspect, it is very important to conduct information training on constructive criticism and on the very idea of evaluation—which is currently promoted only by the Poznan University of Technology.

In the presented research, an effect described by Shettle and Mooney (1999) was also visible, concerning the meaning of the measurement scales used in evaluations. The Likert scale commonly used in such questionnaires is not completely clear for students and the lack of a pollster during the online evaluation process makes it impossible to be explained. That is why the students who participated in the research state that this scale is not good but they are not able to propose anything in exchange. Therefore, from the point of view of the effectiveness of evaluation it would be useful to familiarize the students with the existing scales and the effects of the choice of certain levels. While doing analysis, it is a problem that the questionnaires are anonymous at the stage of collecting the data and not at the stage of presenting the analysis. This results from an excessive care for the anonymity of the respondent, which as showed by the research, is not vital for students nowadays and does not affect the care or responsibility with which the students fill in the questionnaires. It is worth noticing that anonymization at the stage of publishing the data for analysis would not be sufficient and would also influence the motivation of staff members since the students would show more responsibility in filling in the questionnaires.

These results are confirmed by the deepened analysis presented in the work of Michałowicz (2016), where he justifies the view that the evaluations of students are not reliable. Reliability in this aspect can be increased by anonymizing the data at the stage of publishing them for analysis and additionally by increasing the responsibility of students for the evaluations they make as underlined by White (1998), Lynch (2003) and Peacock (2009). Higher education institutions should use reminders and encouragements in the evaluation process, which, as it was confirmed by the research, significantly increase the motivation of students. The fact that the opinions underlined by the students will be heard and that specific actions will follow afterwards as a result are important reasons to participate in the questionnaires.

Although there is a wide range of methods described by Dillman (2000) and Duarte (2014) on how to increase the response rate, higher education institutions do not fully use them. The encouragement of academic teachers is an important

motivation effect mentioned by White (1998), Lynch (2003) and Peacock (2009). A lack of either feedback or awareness that the presented opinions are actually taken into account constitutes an important barrier, which deters the respondents from filling in the questionnaires. This is also confirmed by Nulty (2008). The empirical research shows that the lack of the understanding of the goals of the evaluations as well as their impact together with a lack of visible feedback or effects constitute the most important barriers. The problem here seems to lie in the realm information communication.

The limitations connected with the conducted research are the lack of representativeness of the examined group of students as well as the choice of a method of easy access to universities. Pollsters have observed the resistance of respondents to questions connected with the proposing of their own solutions or proposals. It was easy for them to criticize without a deepened analysis; however, in the case of depended analysis during research in the majority of cases respondents withdrew from their previous opinions.

References

Al Issa, A., & Sulieman, H. (2007). Student evaluations of teaching: Perceptions and biasing factors. *Quality Assurance in Education, 15*(3), 302–317.

Balam, E. M., & Shannon, D. M. (2010). Student ratings of college teachings: A comparison of faculty and their students. *Assessment and Evaluation in Higher Education, 35*(2), 209–221.

Bogdan, R. C., & Biklen, S. K. (2007). *Qualitative research for education: An introduction to theory and methods*. Boston, MA: Pearson Education.

Cook, C., Heath, F., & Thompson, R. L. (2000). A meta-analysis of response rates in web or internet-based surveys. *Educational and Psychological Measurement, 60*(6), 821–836.

Cox, E. P. (1980). The optimal number of response alternatives for a scale: A review. *Journal of Marketing Research, 17*, 407–422.

Darling-Hammond, L., Wise, A. E., & Pease, S. R. (1983). Teacher evaluation in the organizational context: A review of the literature. *Review of Educational Research, 53*(3), 285–328.

Dillman, D. A. (2000). *Mail and internet surveys: The tailored design method* (2nd ed.). New York: Wiley.

Dimitriades, Z. S. (2006). Customer satisfaction, loyalty and commitment in service organizations: Some evidence from Greece. *Management Research News, 29*(12), 782–800.

Duarte, P. (2014). Suggestions for international research using electronic surveys. *The Marketing Review, 14*(3), 297–309.

Golmohammadi, K., Zohoori, M., Hosseinipour, S. J., & Mehdizadeh, S. (2014). Relationship between total quality management, innovation and customer satisfaction in service organizations. *Journal of Business Management and Innovations, 1*(2), 61–66.

Grohmann, A., & Kauffeld, S. (2013). Evaluating training programs: Development and correlates of the questionnaire for professional training evaluation. *International Journal of Training and Development, 17*(2), 135–155.

Hassan, A., Quaid, H., & Aqeel, M. (2016). Academic self-concept, self-esteem, and academic achievement among truant and punctual students. *Pakistan Journal of Psychological Research, 31*(1), 223–240.

Hyman, M. R., & Yang, Z. (2001). International marketing journals: A retrospective. *International Marketing Review, 18*(6), 667–716.

Kennedy, D. (2009). *Designing curricula based on learning outcomes: A practical guide.* Cork, Ireland: University College Cork. [Online]. Accessed May 19, 2017, from http://www.bologna. msmt.cz/files/learning-outcomes.pdf

Likert, R. (1932). A technique for the measurement of attitudes. *Archiv für Psychologie, 140*, 5–55.

Lynch, B. K. (2003). *Language assessment and program evaluation*. Edinburgh: Edinburgh University Press.

Matell, M. S., & Jacoby, J. (1971). Is there an optimal number of alternatives for Likert scale items? Study: Reliability and validity. *Educational and Psychological Measurement, 31*, 657–674.

Messick, S. (1989). Validity. In R. Linn (Ed.), *Educational measurement* (3rd ed., pp. 13–103). New York: Macmillan.

Michałowicz, B. (2016). *Ankiety ewaluacyjne w szkolnictwie wyższym: wpływ wyboru ewaluatorów*. [Evaluation surveys in higher education: the impact of the choice of evaluators], Ph.D. dissertation undertaken under the supervision of Prof. Habil. Dr. Grażyna Wieczorkowska-Wierzbińska, Faculty of Management, University of Warsaw, Department of Psychology and Sociology of Management, Warsaw.

Nulty, D. D. (2008). The adequacy of response rates to online and paper surveys: What can be done? *Assessment and Evaluation in Higher Education, 33*(3), 301–314.

Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Newbury Park-London-New Delhi: Sage.

Peacock, M. (2009). The evaluation of foreign-language-teacher education programs. *Language Teaching Research, 13*, 259–278.

Saks, A. M., & Burke, L. A. (2012). An investigation into the relationship between training evaluation and the transfer of training. *International Journal of Training and Development, 16*, 118–127.

Scriven, M. (1967). The methodology of evaluation. In R. Tyler, R. Gagné, & M. Scriven (Eds.), *Perspectives of curriculum evaluation (AERA monograph series on curriculum evaluation, No. 1)* (pp. 39–83). Chicago: Rand McNally.

Shaw, M. E., & Wright, J. M. (1967). *Scales for the measurement of attitudes*. New York, NY: McGraw Hill.

Shettle, C., & Mooney, G. (1999). Monetary incentives in US government surveys. *Journal of Official Statistics, 15*(2), 231–250.

The Economist. (2016). *Ratings agency. Grading university teachers*. [Online]. Accessed June 22, 2017, from https://www.economist.com/news/united-states/21688924-students-judge-their-teachers-often-unfairly-ratings-agency

Wang, G. G., & Wilcox, D. (2006). Training evaluation: Knowing more than is practiced. *Advances in Developing Human Resources, 8*, 528–539.

White, R. (1998). What is quality in English language teacher education? *English Language Teaching Journal, 52*, 133–139.

Yang, W. (2009). Evaluation of teacher induction practices in a US university English language program: Towards useful evaluation. *Language Teaching Research, 13*, 77–98.

Yang, Z., Wang, X., & Su, C. (2006). A review of research methodologies in international business. *International Business Review, 15*, 601–617.

The Relationship of Content, Accessibility, and Trust with Brand Awareness

Maznah Wan Omar, Marhana Mohamed Anuar, and Nazirul Mubin Mohd Noor

Abstract This chapter discusses the social media advertising particularly on Facebook that have positive relationship with brand awareness among young adult in Malaysia. In the current Industrial revolution, online advertising proves to be the fastest growing sensations particularly in the area of marketing. Indications from past studies show that current young adult consumers have short attention span, and with vast advertising, this escalates consumers to skip messages seen on many social Medias. A quantitative data analysis was conducted to determine the relationship between Facebook advertising and brand awareness among 250 young adults in three public universities from the northern states of peninsular Malaysia. The results of this study provides three important contributions: (1) an enhanced understanding on factors that relates to young adults in purchasing product online; (2) the results will provide empirical evidence on the knowledge of the best platform that can attract consumer attention; and (3) the findings may help small business owners to choose the best places when marketing online.

Keywords Content · Accessibility · Trust · Brand awareness · Malaysia

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1 Introduction

Marketing now moves from paper printing to digital media and thus the platform for marketing and advertising also move forward to evolve around internet marketing. The ideal environment of marketing online is further enhanced with the help of Social media marketing on social networking communities who create content in the social media, thus creating an ideal environment. All this helps to enhance the activities of marketers in reaching their targets. There are several platforms available in performing online marketing. One of the many platforms is Facebook. Facebook has rich databases that allow marketers to take advantage of such pluses through its numerous modes and resources. This study focuses on how marketers should use Facebook and to determine if university students are worth marketing to particularly, nevertheless the study will try to see if Facebook can effectively create brand awareness among the current young adult.

Shared activities such as e-mail, instant messaging, blogging, social networking, and using search engines, sharing media and information and gaming among others are common undertaking experiences user can do through internet. The advance in trend where marketing online will sustain for many more years to come, print media is now replaced with electronic media. Advertising using internet has become the increasing marketing trend owing to the internet's various uses. With the introduction of internet, various marketing uses have been developed in order to reach consumers through online marketing.

In the current marketing trend, social media is a must for marketers when setting their marketing strategy and the development of their marketing mix. The existence of social media in marketing strategy and its marketing mix have enhanced the manner marketers interrelate with its clients. Studies conducted by Odhiambo (2012) have shown that social media single-handedly cannot create brand awareness or even develop business for marketers. Consequently, this study will explore to see if social media through the platform of Facebook to see if social media is more effective in creating brand awareness among young adult. Hence, this study aims to answer the following research question: Which aspect of the Facebook marketing has an impact on Brand Awareness? More specifically, this study has three objectives: (1) to examine the influence of content of Facebook on Brand Awareness; (2) the influence of Accessibility on Brand Awareness; and (3) the influence of Trust on Facebook on Brand Awareness. This study provides a new insight on marketing on Social Media and extend the existing literature on online marketing and provides information to future researchers and practitioners that involves Brand Awareness and Social media.

2 Facebook

We are aware of the role played by Facebook in the era of New Marketing; how far Facebook can be successful in the New Marketing is yet to be proved. Not all concept created on Facebook has gone through many innovations with excellent ideas which overlay path for interactive marketing. Currently, marketers and the designers of the Facebook content will always look for new techniques to reach consumers effectively and efficiently and promotes the evolution of social media marketing (Fowdar and Fowdar 2013). Having 550 million users worldwide adds to worldwide bearing of online marketing on Facebook. Owing to demographic convenience, marketing on social webs such as Facebook is widely held for all industries. Facebook become successful due to the creation of internet market. The benefits from this new surge has generated an unabridged of new domain for marketers. The opportunities created through online marketing are unending.

3 Social Media and Social Networking Theory

With online social networking, it enhances the networking among communities. What internet does is bringing people together through social network. This social network through internet creates tools for online exchange, association, and communication, which permit users to administer their already establish network while at the same time creating additional new connection (Fowdar and Fowdar 2013; Ryan and Jones 2009). With this bonding of relationships, it builds online communities with its main objective of socializing and interface. This is done with contacts who share parallel interests and knowledge amid their community through the enhancement of information exchange. The content which comprise of information embodied in social networks is referred to as social media (Buss and Strauss 2009; Fowdar and Fowdar 2013). Content comprises of photos, status updates, video, and links to websites. The unification of social media concept and its networks contributes to the increase in the number of social networking website that hook up groups and individuals. This platform includes Facebook, Twitter, MySpace, LinkedIn, and Orkut (Fowdar and Fowdar 2013). This chapter researches on Facebook users in particular, which is the most visited online social network and has the most number of users (Fowdar and Fowdar 2013; Techtree News Staff 2008).

3.1 Theory Underpinning Social Media (The Media and Modernity Theory)

The improvement of communication media was the outcome of the intensification of recent social order, from its initial eras of print to current years of electronic advancement, as describe in the theory of "Media and modernity." The impact of modifications in earnings and opinions of societies, from the simple state to the innovation stage as well as the enhancement of education level and social economic variables have aggregated toward technological improvements. Thompson's theory asserts that we primarily have to evaluate how the societies use their communication media first before we can understand the nature of the modern societies. Evidence where print media progresses to emulates societies when it was first introduces further verifies the theory introduced by Thompson (1995). The theory extended to validate that with the amplified numbers of advantage societies by 1500s, it perpetuates urbanized societies who were equipped with technological advancement and supported with industrial development. This propagates modern societies. The theory was also criticized on the fact that in truth there are conditions under which the development of media is not determined by level of innovation alone but instead interchange of numerous variables (Odhiambo 2012).

4 Literature Review

4.1 Brand Awareness

Online marketing is found to be able to build significant brand awareness among consumers through the study conducted by Dennis. Why study on the issue of Brand awareness? Brand awareness is the vital initial stride for any marketing strategy. Increase in sales has always been the ultimate objective of any marketers as it will translate the variable sales increment into continuing brand loyalty. Thus, it is essential to not neglect the aspect of creating that initial awareness when marking the effort toward creating loyalty. To begin with, it is important to ensure venerable loyalty by first creating awareness and an exposure of the brand that are further facilitate by the increasingly digital culture, and online marketing. Building brand awareness is a start on in nearly every successful marketing initiative. After all, if people have no idea that we exist, how are they going to buy our product?

4.2 Content of Social Networking Website

Internet is a communication medium currently used because of its capacity of disseminating information extensively. The content in a social media created by

media firms who are the content owners used for communication with consumers in the media. This insurgency not only stops within the content generators or particularly the media firms, even individuals can also create their own content which is called User-Generated content when using the platforms such as Facebook, Twitter, Instagram, blogs, YouTube and several other social network platforms. Social network users have shown a well-liked response toward social network usage as social network allows users to connect with friends and their counterpart. More so social network permits users and individuals to voice their opinions swiftly through collective networking. Buzz marketing which is also known as viral marketing as well as word-of-mouth (WOM) is an approach of creating a progression where concerned people can promote to each other respectively (Tina Vukasovič 2013). A winning viral marketing tactic is implemented through an excellent approach by acquiring people to utter on the subject of your commerce. Social networking media like Twitter, Facebook etc. act as a catalyst to build up and generate a winning viral marketing promotion above all through the assistance of word-of-mouth that communicate information in the media and demonstrated to be predominantly influential intermediaries, as it recognize the implicit support from a friend.

4.3 Accessibility of Ads in Internet Marketing

The traditional marketing tactics will no more work with current customers. Marketing has gone through a revolution where social media marketing is the new mode of marketing interactions with customers. This platform helps to build solid relationships with customers where initial contact is able to be established long before marketers have actually had any contact with customers. Online engagement was found to be more pleasurable, as creative and attractive messages are possibly conveyed through social media, thus enhancing the bonding between customers and marketers (Jothi et al. 2011).

With online marketing, this contributes to immense competition among brands in the market. Innovation in product and promotion are made possible with internet advertising. Previously the concept of advertising was to provide information about a product or service, but with online marketing, this concept has changed where providing information in an innovative manner is made possible to customers, thus enhancing the advertising strategy. With this innovation, it promotes as well as facilitates customer satisfaction. With this new phenomenon, be it big or small companies, individuals from numerous social life, categories, and life stages, different classes and categories of events, concepts and so forth have realized the great use of social network advertising in order to gain recognition for their brand in the market. What social media can do for more than 200 million active users in the whole world is that it becomes a communication hub for personal users as well as product and branding hub for corporate users. The most used social media platforms include Facebook, Twitter, Stumble upon Ads, LinkedIn Ads, and Pinterest Ads.

There are one common core features and benefits for every brand that exists on social network sites. This common features and benefits, made it possible for the owner of the platform to create a page, share resources, and add multimedia and so forth. Much of the reason why brand promoters prefer marketing through online was mentioned by Morrissey (2009), which is the highly flexible and resourceful characteristics of online web that permits tools, techniques, and contents in the web to be changed easily and constantly. Because of such characteristics, online marketing consumers and buyers easily respond to most of online marketing efforts initiated by the marketers.

4.4 Trust

There are unparalleled amounts of information one can get from Internet. In an environment where information is abundant and varies while circulation of information is not held up by the traditional gatekeepers normally called as the editors who evaluate its content, users of Internet information need to have a skill to evaluate a reliable evidence when accessing it (Hargittai et al. 2010; Metzger 2007). This is supported by Sundar (2007) who exclaims that it is more complex to evaluate credible information when acquiring information online as compared to the forgoing broadcasting perspectives. An evaluation of meek prompts was probable in traditional media; it is practically implausible for an average Internet user to detect credibility of various sources and message categories on the Web because of the diversity of structures rooted in the plentiful deposits of online diffusion of material content. Be wary that materials on the Web are not automatically steadfast despite the fact that users can acquire vast materials online. To escape gauging erroneous materials, users need to cautiously consider the materials by clarifying them, which is generally done through experience and knowledge (Metzger 2007; Wathen and Burkell 2002).

5 Methodologies

This study uses a sample of 250 young adults in three public universities from the northern states of peninsular Malaysia. Several elements were considered before the data collection process, where respondents should be collected from public universities who ranked with four stars and above for the year 2016 in the QS Ranking. Nevertheless, additional eight respondents were selected to answer interview questions. This helped the study to gauge the use of marketing in Internet of Things (IOT) through Facebook.

Demographic Information as well as information from the secondary data was gathered from sources deemed credible such as STATISTA, Business Source Premier and other academic journals and articles. This helped the study to gain an actual

representation of how Facebook Marketing can stimulate and enhance college student's entrepreneurial activities.

A survey method was employed for data collection while the initial interviews were in retreat with six public universities: Universiti Utara Malaysia, Universiti Malaysia Perlis, Universiti Teknologi MARA Perlis, Universiti Teknologi MARA Kedah, Universiti Teknologi MARA Pulau Pinang, and Universiti Sains Malaysia. Respondents were selected from several different disciplines to ensure equal representatives from across campus. For the interview session, the issue that this study would like to capture is: (1) the value each respondents put on Facebook, and (2) what importance will Facebook provide to the respondents, especially with issues that are related to entrepreneurial activities.

In order to avoid the skewness of answers, the study enquired data on marketing issues only after the interview session ends with the respondents. Participants were interviewed and questionnaire was gathered and data collection process followed suit. Correlation analysis was completed to show the influence of Content of Social Networking website, Accessibility of ads in internet marketing and Trust on Brand awareness.

6 Findings of the Study

Table 1 indicates that majority of the respondents spent more than 3 h per day using internet.

Table 2 indicates that young adult in university spend most of their activity time online, doing activities like texting, seeking information, shopping, leisure, social networking, banking activities, and lastly seeking in e-Government.

Table 1 Usage of Internet

Usage of Internet	%
Once a week	8
2 to 3 days a week	15
1 or 2 h a day	35
More than 3 h a day	42

Source: Authors' own study

Table 2 Online activities

Activities	%
Texting	93
Seek info	90
Social network	50
Leisure	65
e-government	42
Bank	48
Shop	68

Source: Authors' own study

Table 3 Reliability coefficients for the variables in the study

Variables	Number of items	Cronbach's Alpha
Brand awareness	12	0.900
Content	9	0.916
Accessibility	6	0.885
Trust	9	0.865

Source: Authors' own calculations

Table 4 Descriptive statistics

	Min	Max	Std. Deviation		Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
Brand awareness	1.45	4.64	3.4328	0.63180	−0.901	0.976
Content	1.00	5.00	4.0626	0.63350	−1.488	6.657
Accessibility	1.00	5.00	3.9413	0.62304	−1.279	6.072
Trust	2.00	5.00	3.8993	0.54937	−0.621	1.560

Source: Authors' own calculations

Table 5 Pearson correlation matrix

Correlations					
		Brand awareness	Content	Accessibility	Trust
Brand awareness	Pearson correlation	1			
	Sig. (2-tailed)				
Content	Pearson correlation	0.544[a]	1		
	Sig. (2-tailed)	0.000			
Accessibility	Pearson correlation	0.426[a]	0.731[a]	1	
	Sig. (2-tailed)	0.000	0.000		
Trust	Pearson correlation	0.471[a]	0.732[a]	0.760[a]	1
	Sig. (2-tailed)	0.000	0.000	0.000	

Source: Authors' own calculations
[a]Correlation is significant at the 0.01 level (2-tailed)

As shown in Table 3, the Cronbach's Alpha is chosen to analyze the degree of consistency among the items in a construct. The general rule of thumb is 0.70; nevertheless the minimum Alpha value for this study is.865 for the variable Trust which is way above the acceptable minimum Alpha requirement.

Table 4 shows the average of the items making up the factors, where items are computed as scores for the respective variables. Skewness and Kurtosis are statistics used to address the characteristics of the distribution. All skewness values falling between the ranges of −1 to 1 indicate a non-substantially skewed distribution. A positive value of Kurtosis indicates a relatively peaked distribution.

Table 5 shows the Pearson's product moment correlation, used as a measure of association to explore the patterns that exist in the relationship between the variables.

Pearson's *r* coefficient identifies the extent of one variable position that occupies the same relative position on another variable. All variables under study are significantly correlated with each other at $p < 0.01$. This indicates that the variance of Brand Awareness positively relates to Content, Accessibility, and Trust.

7 Conclusions

Facebook marketing passion grew because of the enormous size of Facebook itself. This enables marketing resources and metrics in the Ads Manager to make improvement on its advertisement at a speed and time deemed necessary. Results indicate that "Accessibility of Ads" in internet marketing has significant relationship with Brand awareness; this is possible as there are so much data that is available on Facebook, thus permiting the owner of the Facebook account to refine and improve their customization expertise in structuring the content of the Facebook. No doubt there is so much data available on Facebook, but the ability to use the available resources effectively is crucial; otherwise, it defeats the insistence of using Facebook as a platform for online marketing. Nevertheless, facing with abundance of information on Facebook, using the information available is challenging. It is important for the admin of the Facebook page to create Facebook page that provides significant and useful information to Facebook viewers, as viewers will spend more time on social network website. This will increase the time of engagement among viewers. Results from this study indicate that "content of Social networking website" do have a strong relationship with brand awareness. Equally, it is definitely of no use in producing a page if it is not used successfully. In using social media as a means of communicating to consumers so as to enhance the seller and buyer communication effectiveness, the content of social media network such as Facebook will be the backbone of its success. If you publish new content, data which is applicable to the situation or problem at hand that can help solve a problem or contribute to a solution on a regular basis for your viewers to devour, you will find that the online and social media platforms will not increase the number of followers. Versions of social media that do not shell out new and different content are painstakingly lifeless (Odhiambo 2012).

Finally, the variable Trust in this study was also found to be significantly related to Brand Awareness. Report by Social Media Link in the year 2015 indicates that Facebook and Pinterest continue to be the utmost trustworthy social networks for retail and outlay references (Craig 2011; Hargittai et al. 2010). Susan Frech, chief executive officer of Social Media Link 2015, indicates that, when everybody is considering for trusted evidence on the best chocolates, flowers, and restaurant references from social circles, Facebook will cart the utmost trustworthiness (Craig 2011; Hargittai et al. 2010).

References

Buss, A., & Strauss, N. (2009). *The online community's handbook: Building your business and brand on the web*. Berkeley, CA: New Riders.

Craig, K. (2011). *Facebook and college students: Is marketing effective*. University of Tennessee Honors thesis projects.

Fowdar, R. R. R., & Fowdar, S. (2013). The implications of Facebook marketing for organizations. *Contemporary Management Research, 9*(1), 73–84.

Hargittai, E., Fullerton, L., Menchen-Trevino, E., & Thomas, K. Y. (2010). Trust online: Young adults' evaluation of web content. *International Journal of Communication, 4*, 468–494.

Jothi, P. S., Neelamalar, M., & Prasad, R. S. (2011). Analysis of social networking sites: A study on effective communication strategy in developing brand communication. *Journal of Media and Communication Studies, 3*(7), 234–242.

Metzger, M. J. (2007). Making sense of credibility on the web: Models for evaluating online information and recommendations for future research. *Journal of the American Society for Information Science and Technology, 58*(13), 2078–2086.

Morrissey, B. (2009). For some marketers, real time is the new prime time. *Brandweek, Business Source Premier, 28*, 50–39.

Odhiambo, C. A. (2012). *Social media as a tool of marketing and creating awareness*. Vaasan Anmatti Korkeakoulu, Vasa Yrkeshogskola, University of Applied Science.

Ryan, D., & Jones, C. (2009). *Understanding digital marketing: Marketing strategies for engaging the digital generation*. London: Kogan Page.

Sundar, S. S. (2007). The MAIN model: A heuristic approach to understanding technology effects on credibility. In M. J. Metzger & A. J. Flanagin (Eds.), *Digital media, youth, and credibility* (pp. 73–100). Cambridge, MA: The MIT Press.

Techtree News Staff. (2008). *Facebook: Largest, fastest growing social network* [Online]. Accessed February 9, 2011, from http://www.techtree.com

Thompson, J. B. (1995). *The media and modernity: A social theory of the media*. Cambridge, Stanford University Press.

Vukasovič, T. (2013). Building successful brand by using social networking media. *Journal of Media and Communication Studies, 5*(6), 56–63.

Wathen, C. N., & Burkell, J. (2002). Believe it or not: Factors influencing credibility on the web. *Journal of the American Society for Information Science and Technology, 53*(2), 134–144.

Consumers' Ecological Attitudes and Visual Perception of Marking Used on the Food Packaging

Ewa Jerzyk, Renata Nestorowicz, Anna Rogala, Bogna Pilarczyk, and Aneta Disterheft

Abstract In recent years marketing researchers show an increasing interest in consumers' visual perception, which is an essential element in the decision-making process of buying. The dominant role of visual information in marketing communications evoke the need to increase the effectiveness of promotional campaigns. Senders of marketing messages want to know whether the marketing measures and incentives used, such as product labels, reach the target segments of consumers and distinguish their products from the competition. The main objective of this chapter was to determine the influence of labels used on the food packaging on their perceived attractiveness among organic consumers. A questionnaire and eye-tracking tests were used. The tested labels were: "Non-GMO", the European organic food label, "Dobre, bo Wielkopolskie" *[It's good because it comes from Wielkopolska]* and the "green dot" symbol. Studies have shown that the identification of the labels on the packaging is poor and educational activities in this area should be intensified. Consumers of organic food and those who do not buy it perceive the labels used on their products likewise. Moreover, findings show that their impact power is not significant. The "Non-GMO" label attracted the most attention from the respondents.

Keywords Consumers' attitudes · Visual attention · Packaging · Food products

1 Introduction

In recent years, in marketing, researchers have been increasingly interested in the consumer's visual perception, which is an important element of the information processing process in making purchase decisions. A growing number of

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advertisements and the dominating role of visual information in marketing messages force a need to increase the effectiveness of promotional campaigns. Producers and senders of marketing messages want to know if the used means and stimuli of marketing impact will attract the attention of the target segment of buyers and if they will make their products stand out from competitors (Wedel and Pieters 2000). Labels and information placed on packaging are considered an important tool for communication with consumers, especially when it comes to specific attitudes, e.g. ecological, ethnocentric. They are a source of consumer knowledge and help to make more conscious and rational purchasing decisions. On the food market, there are over 200 labels and symbols informing about ecological, ethical, syntactic and balanced attributes of products (Jørgensen 2016; Darnall et al. 2018). The range of labels is extended by the symbols informing about the country of origin or the local nature of the product. This leads to a situation in which the consumer may feel confused in the jumble of labels which he/she may sometimes not understand or simply ignore because of such affluence of them (Kavaliauske et al. 2013). Therefore, a question arises about their role in the selection process and consumer purchase decision. In this chapter, we will discuss the importance of selected eco-labels on food products, their understanding by consumers and whether their use on packaging translates into the attractiveness of the product and its preference for potential consumers.

So far, the issue of consumer attitude, which determines the purchasing behaviour and may influence the information processing process, has been omitted in the research. That is why it is important to determine the role of the labels used on the packaging of food products for consumers with a specific attitude. Do consumers who buy/do not buy certified food products process the information presented on the product packaging in different ways? The aim of the conducted research was thus to determine the perception of labelling that is present on food products based on eye-tracking tests and questionnaire measurements as well as indication of the significance of these labels for consumers and non-consumers of organic food.

2 Consumer's Visual Note: Literature Review

Visual observation includes the process of perceiving information by the eye and begins with the detection and registration of the visual stimulus in an active way that is conscious or passive (unconscious). It is an important stage in the information processing process that determines the behaviour and decisions of consumers. Recognising and understanding the essence of visual attention may expand knowledge about designing effective marketing activities which use visual messages, such as packaging, advertising and the look of a shop shelf. It is estimated that nearly 90% of stimuli perceived by the consumer reaches him/her by visual means (Foxal and Goldsmith 1998).

Lack of knowledge about what the consumer sees, pays attention and evaluates, prevents the preparation of effective packaging and labelling that will distinguish the

product from other similar offers and will encourage to buy. Research by East (1973), Russo and Leclerc (1994), Pieters and Warlop (1999) showed that consumers are more attentive to more valuable offers, and therefore, increasing the visual attention on the product raises the probability of choosing it. Measurements of visual perception help to conclude on the visibility, memorising information, the validity of attributes, and also allow prediction of purchase decisions. Products and brands that get attention achieve higher sales; they can also indicate the strengths of the offer that boosts the shopping motivation. Tao et al. (2015, 2016) indicate that "actually see" nutrition facts or health claims affect what the consumer buys, for example, he is more likely to pay for protein, sodium and carbohydrates than for fat. Whereas Huddleston et al. (2015), based on eye-tracking tests, show that information on the product without price causes even higher probability of its purchase than the same information with the price.

Along with the increased sensitivity and awareness of consumers regarding environmental issues, their lifestyle and purchasing behaviour are also changing. The consumers are addressed with advertising messages emphasising ecological advantages of products: biodegradable or sustainable packaging, recycled products, eco-labels of production methods, etc. In general, all marketing messages, including product labelling, are to help consumers make better, more responsible decisions, but the overload of information and the difficulty in understanding them hinder comparing and evaluating products before buying. Although there are more and more eco-labels, few researchers are attempting to determine whether consumers notice such labels and whether they are more likely to buy products with such labels. Product labelling should ensure greater recognition and distinction. Sometimes changing the location of a label may affect its perception (Smith 2015) and ultimately determine the purchase decision. Despite the fact that eye-tracking tests on food packaging labels are at an early stage, the first joint findings are emerging to improve the designation so that consumers can better locate and interpret the label.

3   Methodology and Participants

A questionnaire and an eye-tracking test ($n = 87$) were used. The authors used Mobile EyeTracker, which allows to analyse the eye movements characteristics, which include: place, length and number of fixations, number and amplitude of saccades, pupils' dilation, blinking frequency, and many other indicators that allow you to analyse the processes of perception of visual materials, as television ads, websites, leaflets, packaging, etc. Authors worked by SMI (SensoMotoric Instruments) Eye Tracking Glasses 2 Wireless with HD camera.

Eighty-seven people participated in the study (Table 1). Their age ranged from 18 to 69, 87.4% of which were females. There were a few requirements for recruitment: being consumer and buyer of butter and have normal or corrected-to-normal vision and full colour vision. The tested labels were (there were independent variables): "Non-GMO", the European organic food label, "Dobre, bo

Table 1 Structure of respondents participating in the research

Item	Number of responses	Share in %
Total	87	100.0
Gender		
Women	76	87.4
Men	11	12.6
Education		
Professional	2	2.3
Average	14	16.1
Higher	71	81.6
The amount of butter consumed		
Very little	12	13.8
Little	14	16.1
Not much or much	34	39.1
A lot	23	26.4
Lots of	4	4.6
Frequency of buying certified organic food		
At least once a week	23	26.4
At least once a month	31	35.6
At least once every 3 months	16	18.4
At least once a year	7	8.0
Less than once a year	4	4.6
Never	6	6.9

Source: Own elaboration based on a questionnaire survey

Table 4 Testing the packages—research conditions

Packaging	Labels
Control–1	Without label
Tested–2	Non-GMO label
Tested–3	European organic food label
Tested–4	"Dobre, bo Wielkopolskie" [*It's good because it comes from Wielkopolska*]
Tested–5	Green dot

Source: Conducted research

Wielkopolskie" (Wielkopolska is one of the regions in Poland) and "green dot" symbol. One of these labels—"Dobre, bo Wielkopolskie"—does not exist in practice. We designed packaging of butter based on one of the little-known package (at that time). Butter is a product widely consumed worldwide and particularly in Poland—4.3 kg per capita (Żuławiński 2017). Five pictures were presented to every participant, every picture during 5 s (four well-known and one designed by us—Table 4). There were five treatment groups: one control group and four experimental groups. Participants who saw the image without labels were the control group. Next consumers were asked to evaluate it.

At the beginning, the participants were asked to sit at a distance of 65 cm from the monitor and to move as little as possible. Before starting the research the participants followed a 3-point calibration procedure. Instructions were shown on the screen and

participants were asked to look at and evaluate the products. Likert's 5-point scale was used to measure consumer attitudes (from 1 "definitely no" to 5 "definitely yes"), in which the respondents were to determine how much they agreed with the statements:

- I know this product.
- Is an ecological product.
- Its price is high.
- The product inspires confidence.
- I like the colour of the package.
- The package encourages purchase.
- Packaging is aesthetic.
- Is a quality product.
- I will buy it.

And at the end consumers were ask to fill the questionnaire.

4 Consumer Knowledge Regarding the Information Appearing on Food Packaging

As part of the research, the level of familiarity with the labels found on food packaging, the European organic food label, the green dot and the "Non-GMO" logo, was determined. Four variants of answers were formulated for each label, three of which were incorrect (Table 2).

As it turned out, respondents had a big problem with indicating the right messages symbolised by individual labels. The most recognisable label was Non-GMO—92% of respondents interpreted it without error. The European label of organic food was less well recognised—82.8% indicated the correct answer (Table 3). Most problems were caused by the label of the green dot, referring to the producer's belonging to the recycling system of packaging waste—only 31% of respondents identified it correctly. It is worth emphasising that in the case of the green dot more than half of the respondents (50.6%) indicated an incorrect answer suggesting that the product is recyclable.

The research results indicate that the recognisability of labels on the packaging is poor and educational activities in this area should be intensified. The shaping of young consumers' attitudes, who currently act as advisors in purchasing decisions taken by adults, and will be conscious consumers in the future, may be particularly valuable. It is worth emphasising the greater knowledge of labels that refer directly to the consumer, and the consumption of the products marked with them translates into his/her health and quality of life.

Table 2 Tested labels appearing on food packaging

Label	Meaning
	(a) European label for low-calorie products (b) *European organic food label* (c) The product comes from the European Union (d) Dietetic product
	(a) Recyclable (b) Ecological product (c) A product made with respect for the natural environment (d) *The producer of the product belongs to the recycling system for packaging waste*
	(a) *Genetically unmodified product* (b) The product was produced without the use of fertilisers (c) The product may contain GMO allergens (d) Product of animal or vegetable origin whose DNA has been changed

The answers in Italics are correct
Source: Conducted research

Table 3 Respondents who correctly identified the labels on the packaging of food products

No.	Specification	% of correct answers
1.	"Non-GMO"	92.0
2.	European organic food label	82.8
3.	Green dot	31.0

Source: Conducted research

5 Markings and Visual Observation of Consumers in Eye-Tracking Tests

In order to check which element of the packaging the respondents pay the most attention to, eye-tracking tests were carried out. Eye-tracking tests were accompanied by questions that probed the assessments of the presented products. Thus, each subject watched one of the butter packaging—without labelling or with the selected label (Table 4), and then evaluated the product based on the previously viewed packaging.

The tests carried out did not show relationships statistically significant between the presence of the label on the packaging of butter and its evaluation (Table 5).

The eye-tracking test investigated how the perception of butter packaging changes depending on the labels placed on them (Table 6). For this purpose, a one-way analysis of variance was carried out. In this case, the independent variable was the type of label, while the dependent variables showed the consumer's interest: the order in which the area was noticed, the total time to look at the area, the number of another looks (revisits), and the average length of a single fixation. As it turned
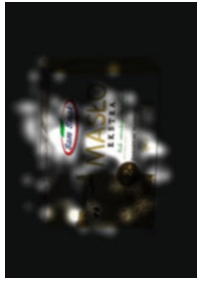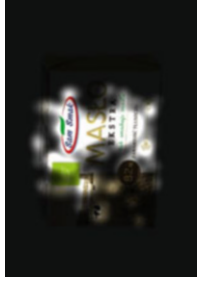
Table 5 Average grades of butters in tested packaging (scale: from 1 "definitely no" to 5 "definitely yes")

Specification	Control packaging N = 15		Packaging with the euro-leaf N = 17		GMO free packaging N = 17		"Dobre, bo Wielkopolskie" packaging N = 16		Packaging with green arrow N = 18	
	Average	Standard deviation	Average	Standard deviation	Average	Standard deviation	Average	Standard deviation	Average	Standard deviation
I know this product	1.59	0.71	159	0.71	1.59	1.06	1.35	0.61	1.56	1.04
It is a Polish product	3.76	0.97	**4.06**	0.66	3.82	0.81	3.94	0.81	3.94	0.80
It is a natural product	3.71	0.47	3.82	0.64	**4.18**	0.81	3.35	0.70	3.28	0.96
It is a healthy product	3.53	0.87	3.53	0.80	**4.06**	0.56	3.41	0.79	3.61	0.67
It is a high-quality product	3.94	0.55	3.76	0.66	**4.18**	0.73	3.47	0.80	3.50	0.79
It is an ecological product	3.41	0.79	3.82	0.73	**4.00**	0.87	3.29	0.85	3.17	0.86
Its price is high	3.24	0.44	3.35	0.61	**3.53**	0.80	3.00	0.79	3.12	0.60
I like the packaging	**4.47**	0.64	4.06	0.43	4.18	0.64	3.94	0.68	4.17	0.99
Packaging encourages to buy the product	**4.40**	0.63	4.24	0.44	4.12	0.70	3.88	0.88	4.33	0.77
Packaging is neat	4.40	0.63	**4.41**	0.51	4.24	0.56	4.07	0.80	4.28	0.82
Product looks trust-worthy	**4.33**	0.72	4.24	0.56	4.06	0.83	3.81	0.91	4.11	0.76
Packaging is eco-friendly	**3.67**	1.04	3.47	0.80	3.29	1.05	3.56	0.81	3.40	1.11
I will buy it	**3.87**	0.83	3.35	0.93	3.24	0.52	3.38	1.03	3.17	1.04

Bold numbers in the table show the highest average butter grades according to the given criteria

Source: Conducted research

Table 6 Focus maps indicating the consumers' fixations according to research conditions

Control	Eco EU	GMO free
"Dobre, bo Wielkopolskie"	Green dot	

The highest intensity of attention is marked clearly; where it is weaker, the colour turns into grey and then black

Source: Conducted research

out, the Non-GMO label was found the fastest in relation to lack of any label, then the "recyclable product" label, "Dobre, bo Wielkopolskie" and at the end the ecological food label. The number of revisits turned out to be the largest for the organic food label, then the "Non-GMO" label, then "Dobre, bo Wielkopolskie" and "the product is recyclable". The largest average fixation length was noted for the "Non-GMO" label, then for "Dobre, bo Wielkopolskie", organic food and the recycling label. The total time spent watching the label took values analogous to the average fixation time. Thermal maps for butter containing individual labels are listed in Table 6.

It was found that the "GMO free" label attracted relatively the most attention. Consumers noticed it quite quickly and at the same time spent a lot of time watching it. This may result from interest in the subject of GMOs, consumer awareness of the importance of genetic modification of food products, as well as the effect of novelty (consumers were able to meet with the labelling in this form for the first time). The justification for greater attention focused on this label may also be its specificity—the label was presented in verbal form and therefore, it is assumed that the respondents could spend more time reading it. At the same time, the butters presented with the abovementioned labelling were rated the highest in terms of the naturalness and ecological character of the product. The results for the other labels are not significantly different from each other, and consumers paid relatively little attention to them.

The research also tried to identify the relationship between the perception of the euro-leaf label by consumers who often buy certified organic food (61% of respondents at least once a month) and those who declare that they do not buy such products or do it very rarely (39% of respondents). In general, only the difference (statistically significant: $p < 0.05$) was observed in relation to the order of viewing eco-labelling—the euro-leaf label was noticed earlier by buyers of organic food compared to those who do it sporadically or do not buy at all—the average was respectively: 3.22 with a standard error of 1.049 and 4.11, with a standard error of 1.313.

6 Conclusion

Research has shown that placing labels on packaging can shape the attitudes and knowledge of buyers about food products more effectively, as long as the labels are new and will be enriched with verbal content (short information explaining the essence of the label. The verbal explanation of the label presented in the form of a pictogram will increase its visibility and will strengthen the role in the decision-making process. Moreover, it can play an educational and informational role. Label is used on packaging for many years (such as "green dot") do not arouse consumers' interest, are ignored and confirm that these labels have already "stuck" and thus, lost the characteristics of extraordinariness or lost the recipients' trust. The label that attracts the attention of buyers is "Non-GMO"—its presence on the packaging can

cause an increase in consumer confidence in the product and ultimately lead to a purchase decision. Greater visual exploration of this label may result from its novelty, contrasting colours, which translate into greater visual attention.

In relation to labels—organic food, green got, labelling of the product's region of origin—there is a recognition of the need to undertake broader promotional and educational activities, especially with regard to the younger generation, recognised as more sensitive to social problems and valuing the quality of life. The lack of a wider information campaign devoted to these labels means that they do not fulfil their natural informational role on the packaging.

The increasing level of consumer ethnocentrism suggests the need to use indications informing about the origin of the product. The introduction of such labels, especially in the category of food products, can be an important element of building a competitive advantage of a given offer.

The tests showed the sensitivity of the visual attention of consumers in relation to colour labels, expressed in words, new, but also messages referring to their health and quality of life. Consumers are becoming more and more attentive, more aware of their purchasing decisions, especially when their health, safety and quality of life is at stake. For many consumers, health reasons are an important premise for purchase decisions. To a lesser extent, the attentiveness of consumers is associated with information about the environment, the producer's social responsibility for the state of the natural environment.

The results of the conducted analyses indicate the need to continue research on the impact of labels on the attractiveness of the product and the prediction of purchase. The use of the methodology of eye-tracking tests may lead to many useful arrangements related to the way consumers use the labels and information contained on the packaging. It will help to uncover the heuristics governing the process of food purchase and the perception of messages and thus, play an important role in the promotion of healthy eating and shaping the desired and balanced civic attitudes. This type of research can help policy makers determine the rules for labelling food and the distribution of information that should be noticed to effectively shape purchasing behaviour.

References

Darnall, N., Ji, H., & Vázquez-Brust, D. A. (2018). Third-party certification, sponsorship, and consumers' ecolabel use. *Journal of Business Ethics, 150*(4), 953–969.

East, R. (1973). The durations of attention to alternatives and re-evaluation in choices with two and three alternatives. *European Journal of Social Psychology, 3*, 125–144.

Foxal, G. R., & Goldsmith, R. E. (1998). *Psychologia konsumenta dla menedżera marketingu [Consumer psychology for marketing]*. Warszawa: Wydawnictwo Naukowe PWN.

Huddleston, P., Behe, B. K., Minahan, S., & Fernandez, R. T. (2015). Seeking attention: An eye tracking study of in-store merchandise displays. *International Journal of Retail &Distribution Management, 43*(6), 561–574.

Jørgensen, R. B. (2016). Eco labelling from the consumer perspective: A case study of indoor paint products. *Journal of Research for Consumers, 27*, 1.

Kavaliauske, M., Vaskiv, U., & Seimiene, E. (2013). Consumers perception of Lithuanian eco-label. *Economics & Management, 18*(4), 802–815.

Pieters, R., & Warlop, L. (1999). Visual attention during brand choice: The impact of time pressure and task motivation. *International Journal of Research in Marketing, 16*, 1–16.

Russo, J. E., & Leclerc, F. (1994). An eye-fixation analysis of choice processes for consumer nondurables. *Journal of Consumer Research, 21*, 274–290.

Smith, A. S. (2015). *Evaluating consumer response to environmental labels on packaging using eye-tracking*. Virginia Tech [online]. Accessed November 25, 2017, from https://vtechworks.lib.vt.edu/handle/10919/54579?show=full

Tao, R., Chengyan, Y., & Rihn, A. (2015). Are grocery shoppers of households with weight-concerned members willing to pay more for nutritional information on food? *Journal of Food Distribution Research, 46*(3), 113–130.

Tao, R., Chengun, Y., & Rihn, A. (2016). Does nutrition information contribute to grocery shoppers' willingness to pay. *Journal of Food Products Marketing, 23*(5), 591–608.

Wedel, M., & Pieters, R. (2000). Eye fixations an advertisements and memory for brands: A model and finding. *Marketing Science, 19*(1), 279–312.

Żuławiński, M. (2017). *Masło mocno podrożało. Wyjaśniamy skąd wzięły się takie ceny* [*Analiza*], [*The butter went up a lot. We explain where these prices came from* [*Analysis*]] [online]. Accessed June 20, 2017, from https://www.bankier.pl/wiadomosc/Maslo-mocno-podrozalo-Wyjasniamy-skad-wziely-sie-takie-ceny-Analiza-7532966.html

Millennials' Response Toward Cause-Related Marketing Advertisements via Social Media and Magazines: Which Is More Effective?

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Abstract Millennials are more involved in corporate social responsibility (CSR) and respond more positively toward cause-related marketing (CRM). In the past, CRM campaigns have relied heavily on traditional offline media channels to promote their cause to audiences. However, with the emergence of modern media channels such as the Internet and social media (Facebook, Twitter, YouTube), many CRM campaigns have switched to these channels especially when targeting Millennials. However, research that examines the effectiveness of CRM campaigns that target Millennials via social media ads is still lacking. Therefore, we investigated the effect of social media ad versus magazine ad on Millennials' response toward CRM campaigns by examining the impact of these two types of media on three responses: (1) attitude toward CRM, (2) trust in CRM, and (3) brand loyalty intention. We used a 1×2 between-subject experimental design (types of media channel for CRM campaigns; social media ad versus magazine ad). Based on the data collected from 135 respondents, our findings indicated that there is no significant difference between the effects of social media ad versus magazine ad on Millennials' responses to CRM. The findings are particularly useful for managers and practitioners involved in the planning of CRM campaigns, CSR initiatives, and integrated marketing communications for companies.

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1   Introduction

In today's market, demonstrating corporate social responsibility (CSR) is a must. It is a vital long-term strategy for companies wishing to gain competitive advantage. Cause-related marketing (CRM) is a type of CSR initiative that focuses on "doing good" by forming a partnership between a company and a cause. Around the world, the growth in this type of partnership spending is growing steadily. It has been reported that cause-partnership spending in North America grew from USD1.92 billion in 2015 to USD1.99 billion in 2016, an increase of 3.3%. This spending has been forecast to increase further by about 3.6% over 2016 reaching USD2.06 billion in 2017 (IEG Sponsorship Report 2017). The steady increase in spending on cause-partnerships is partly due to the increasing demand among consumers that companies fulfill their CSR obligations. Globally, 66% of the respondents surveyed in 2015 by Nielsen Company stated that they are willing to pay extra for products and services that support social and environmental causes. Moreover, this figure increased by 5% in 1 year, from 50% in 2013 to 55% in 2014 (Nielsen 2015). A more recent global study on consumers' preference for sustainable brands conducted by Unilever showed a similar trend, where 33% of the consumers surveyed indicated that they prefer to buy products that strongly support social or environmental causes (Unilever 2017). The study also revealed that 21% of the respondents actively seek brands that provide details on their support of causes on their promotional materials and product labels. Additionally, it has been proposed that motive-led purchasing is greater among consumers in emerging markets such as in India, Brazil, and Turkey rather than in the United Kingdom and the United States (Unilever 2017).

Over the past decades, CRM campaigns conducted in the global market have relied heavily on traditional media channels such as television, magazines, and newspapers. Today, the media channels used to promote CRM campaigns have evolved in line with the advancement in technology. The media channels used to promote CRM campaigns have to adapt to current technology. With the emergence of digitally driven methods of communication such as social media services like Facebook, Twitter, YouTube, Snapchat and Instagram, to name a few, many global companies have switched to using social media to promote their CRM campaigns. Social media has been used widely especially for CRM campaigns targeting the Millennials segment. Millennials are globally more involved in corporate social responsibility (CSR) and respond more positively toward CRM. When compared to other age segments, Millennials are well known for being the most civic-minded generation (Cone Communications 2015). Millennials have been found to be more engaged with CSR. They prefer to buy CRM products and use online networks to communicate about social and environmental messages with their friends. The 2015 Cone Communication Millennials CSR study indicated that 87% of the Millennials

surveyed stated that they prefer to purchase a product that supports a social or environmental cause, and the majority (82%) communicate with their family and friends regarding CSR efforts (Cone Communications 2015).

In terms of purchasing power, Millennials are a strong consumer segment. By 2018, it is predicted that Millennials will have the *most* spending power compared to other generations (Schroeder 2017). Millennials in the United States, who number about 80 million, have a combined purchasing power of USD200 billion and over their lifetime it has been estimated that they could spend in the region of USD10 trillion (Schroeder 2017; McDaniel et al. 2013). The Millennials in the United States represent about one quarter of the global Millennials population. Given the characteristics of Millennials, who are socially and environmentally conscious and also have high purchasing power, many well-known companies are fiercely competing to gain a market share of this segment. While Millennials can be supportive of socially responsible companies, they tend to respond negatively toward companies that are irresponsible. Thus, targeting Millennials using CRM can bring many advantages to companies. However, there is no "one-size-fits-all" strategy that can be used to communicate with this group of consumers. One of the challenges currently affecting brands and CRM campaigns is to find the most effective channel that can overcome advertising clutter. For decades companies have been struggling to engage with Millennials because many of the traditional methods of advertising have failed to attract their attention. According to research (e.g., Pileliene and Grigaliunaite 2016), in the past it was much easier to attract consumers' visual attention; however, todays' consumers are resistant to advertisements. Many consumers tend to ignore ads. Traditional communications channels are less effective at garnering the interest of this generation. Hence, modern media such as social network sites might be more effective in capturing their attention when it comes to CSR messages. Schroeder (2017) stated that 62% of Millennials saying that brands that engaged the Millennials via social networks would be able to make this group to become loyal customers of those brands. Many global companies such as Nike, Nestlé, and Avon, to name a few, have switched to modern media to communicate their CRM messages to Millennials. Indeed, many companies have used modern media channels in conveying CSR and CRM messages to Millennials. However, to date research that investigates the effectiveness of such media (e.g., Facebook, YouTube, Twitter) in targeting Millennials is still lacking. Yet, we hypothesize that the type of media used to communicate CRM messages plays a critical role in attracting the audience's attention toward CRM. Moreover, consumers obtain information pertaining to companies' CRM campaigns from a plethora of media. The Cone Communications Millennial Study (2015) reported that Millennials' preference for CSR communication varies; 19% prefer on-pack, 17% social media, 13% company website, 12% media, and 11% advertising.

Hence, we sought to answer the following research question: Which marketing channels—social media or magazine—is more effective in generating a more positive response from Millennials? More specifically, our research had a three-pronged objective of examining the effect of social media ad versus magazine ad on (1) attitude toward CRM, (2) trust in CRM, and (3) brand loyalty intention. This study

provides new insights on communication channels that are effective in generating a more positive response from Millennials. Additionally, this study extends the existing literature on CRM and provides information that is beneficial for marketers and practitioners involved in CSR initiatives.

2   Literature Review

2.1   An Overview of Cause-Related Marketing

The seminal article on CRM by Varadarajan and Menon (1988) defines CRM as "the process of formulating and implementing marketing activities that are characterized by an offer from the firm to contribute a specified amount to designated cause when consumers engage in revenue-providing exchanges that satisfy organizational and individual objectives" (p. 61). Cause-related marketing is a type of initiative that falls under the CSR umbrella. The first CRM campaign was conducted by American Express in 1983 (Adkins 2000). The CRM campaign conducted by American Express was successful in generating funds for the restoration of the Statue of Liberty project. The CRM campaign also benefited American Express because the usage of the American Express card and new applications for the card increased as a result of the campaign. The alliance formed between a cause and a company provides mutual benefits for both. Cause-related marketing provides win–win benefits for both the sponsoring company and the supported cause. It has been used by companies to realize various objectives such as increased sales, enhanced brand image, and greater customer loyalty, among others (Berglind and Nakata 2005; Mohamed Anuar and Osman 2016). Charitable bodies or nonprofit organizations that have engaged in CRM have experienced several benefits such as an increase in funding, increased publicity, and improved message efficacy. Cause-related marketing initiatives can be dedicated to various issues and causes ranging from children, education, human rights, and medical to natural environment (Mititelu et al. 2014).

It was in the 1980s that CRM first started to attract the interest of companies. A decade later it was flourishing and became one of the fastest growing types of marketing strategy (Smith 1994). Currently, CRM is rising in popularity but is facing a big challenge in terms of the need to overcome advertising clutter. Cause-related marketing campaigns have to be adapted constantly in order to keep up to date with audiences' changing preferences. Hence, CRM campaigns are also making use of modern channels to convey CRM messages to audiences. The channels of communication used for CRM have evolved from mainly traditional media such as printed ads in newspaper and magazines to modern media such as Internet advertisements and social media services such as Facebook, YouTube, and Twitter.

2.2 Underlying Theory

Much research on CRM has been conducted since the seminal article on CRM by Varadarajan and Menon in 1988. Past studies' findings have revealed that CRM is able to generate a positive response among consumers toward brands, companies, and causes (e.g., Bigne-Alcaniz et al. 2012; Mohamed Anuar and Osman 2016). Signaling theory explains how cues can be used by consumers to evaluate an object. The theory proposes that cues give consumers the necessary information that may help them to evaluate an object. In the context of CRM, cues such as advertising, types of cause supported, donation amount, and types of channels used to promote CRM products may serve as signals that can be used by consumers to form their attitude, perception, and belief about products and services. With the advances in technology and the rise of social media, CRM is using modern media such as Facebook, Twitter, Instagram, and YouTube in conjunction with traditional media such as product labels, print advertisements and radio and television advertisements. Social media can be used by companies to create online social networking that gathers Millennials together online.

2.3 Millennials' Response to Cause-Related Marketing

Millennials have been characterized as the age group that is the most consumption oriented (Bucic et al. 2012). This segment is perceived as being more socially conscious and caring about the environment. Millennials appears to hold crucial values that can be exploited by CRM, that is, they are concerned about social causes, the environment and activism. Past studies have found that Millennials respond favorably toward CRM (e.g., Cui et al. 2003). The Cone Communication study (2013) stated that 55% of the Millennials surveyed have purchased products linked to a cause. The results also showed that companies' support of social and environmental causes can increase trust (91%), loyalty (89%), and intention to buy products and services (89%) among the Millennials surveyed (Cone Communication 2013). Millennials are also known as digital natives and they engage with causes they care about via digital media. About 71% of Millennials use social media as a platform to discuss issues they are concerned about as well to show their support for social and environmental issues (Cone Communications 2014). In addition, the Cone Communication study (2014) found that 80% of the respondents are more likely to make a donation to and support a cause after they read about the issue online.

Past studies have also found that younger consumers (Millennials) are more positive about CRM campaigns (e.g., Barnes 1992; Cui et al. 2003; Mohamed Anuar 2011). The positive response toward CRM among Millennials is due to their greater concern about social issues. In the most recent study by Cone Communications (2017), Millennials have been found to actively engage in CSR communications. They would like to voice their opinions about companies' CSR efforts and
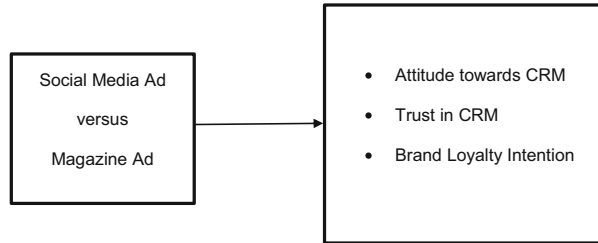
tend to share CSR messages in their own networks (Cone Communications 2017). Cause-related marketing has the potential to affect the purchase decisions of Millennials (Cui et al. 2003; Hyllegard et al. 2011). Notably, Millennials might respond differently than other age groups to CRM based on structural elements such as type of cause, geographic scope of cause, type of support, and length/frequency of support (Cui et al. 2003). For instance, Cui et al. (2003) found that Millennials respond favorably to CRM campaigns that support disaster relief. They were also found to show a better response to CRM campaigns that support local causes, and they tend to support a cause over the long term and on a frequent basis. Given this background, the issue of trust seems to be a factor in consumers' acceptance of CRM. Cause-related marketing campaigns that are conducted over the short term, as a one-off and on an irregular basis may attract consumer skepticism.

Hence, trust and skepticism are crucial issues in CRM. Trust plays an important role in a situation where there is a degree of uncertainty such as in the case of a CRM campaign. In the Millennials' decision-making process regarding the purchase of cause-related products or services, trust would reduce uncertainty and act as cue that could facilitate their decision-making process (Hartmann et al. 2015). Consumers often doubt CRM initiatives because they tend to be skeptical about companies' motivations for conducting CRM. Companies' motives for conducting CRM are often seen as self-interested rather than altruistic (Barone et al. 2000; Webb and Mohr 1998). Consumers' feelings of trust and skepticism would thus influence the processing and interpretation of CRM messages. Past research suggests that CRM is able to enhance consumer loyalty (e.g., Hartmann et al. 2015; Berglind and Nakata 2005). The results presented in Hartmann et al. (2015) showed that consumer trust in a retailer's CRM campaign is able to increase consumer loyalty toward the retailer.

In light of the above, this study investigates the effect of traditional and modern communication channels on the effectiveness of CRM. Specifically, it examines how CRM advertisements in traditional media (magazine) versus CRM advertisements via modern media (Facebook) affect three consumer responses: attitude toward CRM, trust in CRM, and brand loyalty intention, as illustrated in the conceptual framework presented in Fig. 1.

We hypothesized that:

H1: CRM campaigns that use social media ad rather than magazine ad will lead to higher attitude toward CRM.

H2: CRM campaigns that use social media ad rather than magazine ad will lead to higher trust in CRM.

H3: CRM campaigns that use social media ad rather than magazine ad will lead to higher brand loyalty intention.

3   Materials and Methods

3.1   Survey and Data Collection

In order to examine the effect of social media vs. magazine ads on Millennials' responses to CRM, an online survey was conducted via a Facebook page among students undertaking a marketing course. The participation of the students in this study was voluntary. A total of 150 questionnaires were distributed to students at several marketing classes. A total of 135 responses were received and used in the data analysis. Of the 135 respondents, 90.4% were female and 9.6% were male. The majority (41.1%) were in the age group of 23–24 years old, 39.7% were aged 21–22 and 19.2% were 25 years old and above. With regards to race, the majority were Malay (65.8%), followed by Chinese (26.0%) and other races (8.2%).

In the survey, the respondents were asked to (1) read a brief introduction describing a general CRM campaign partnership formed between a company and a cause; (2) read a fictitious CRM advertisement showing Brand Fresh mineral water's support of a poverty-related cause; (3) indicate their attitude toward CRM, trust in CRM and brand loyalty intention; and (4) answer some questions pertaining to demographic data.

This study employed a 1×2 between-subject design (types of media channel: CRM ad via social media and CRM ad via magazine). Respondents were randomly assigned to one of two conditions: Set A (CRM ad via social media) and Set B (CRM ad via magazine). Figure 2 shows the stimulus CRM ad used in the survey. The CRM ads were kept invariant except for the manipulation or treatments. The ads content (image and text) were the same for both social media and the magazine, except for the wording of the statement accompanying the ad which indicated to the respondents in which medium the ad appeared.

3.2   Measurement Items and Data Analysis

The questionnaire items were adapted from several sources. The measures for attitude toward CRM were adapted from Coric and Dropiljic (2015), while those for trust in CRM and brand loyalty intention were adapted from Hartmann et al. (2015). The questionnaire used a 5-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. To achieve the main objective of this research,

Please consider the following situation. **Fresh** is a brand of mineral water and is sold in many supermarkets and convenience stores. The company advertised its cause-related marketing campaign in magazines stating the following: "For every unit of **Fresh** mineral water sold, a portion will be donated to poor people in Malaysia".

Fig. 2 CRM ad in magazine. Source: Authors' own study

Table 1 Descriptive statistics of main variables

Dependent variable	Mean	Std. deviation
Attitude toward CRM	4.081	0.549
Trust in CRM	3.914	0.542
Brand loyalty intention	3.594	0.629

Note: All items used a 5-point scale
Source: Authors' own calculations

descriptive statistics and independent sample t-tests were carried out. Hypotheses 1, 2, and 3 were tested using independent sample t-tests.

4   Findings and Discussion

Table 1 shows the descriptive statistics of the study sample. The mean values for the dependent variables are all above the average level, indicating that the respondents in this study responded positively toward CRM.

Independent sample *t*-tests were conducted to compare the effect of CRM advertisement type (i.e., social media ad vs. printed magazine ad) on Millennials' attitude toward CRM, trust in CRM and brand loyalty. Table 2 provides the results of the independent sample *t*-tests that were carried out.

The objective of this study was to understand the effect of media channel types (traditional media—CRM ad in magazine versus modern media—CRM ad on social media such as Facebook) on three consumer response variables: (1) attitude toward CRM, (2) trust in CRM, and (3) brand loyalty intention.

The results revealed that there was no significant difference in terms of the effect of CRM's media channel types on all three of these responses. Hence, the results provide empirical evidence that, on average, the Millennials did not respond differently to social media ads vs. magazine ads. Therefore, all three hypotheses were not supported.

These results make a significant contribution toward both theory and practice. The results imply that both traditional and modern media can be used together to maximize the impact of CRM promotions on Millennials. Modern media has not replaced traditional media. Rather, it can be used to complement traditional promotional tools because each has its own strengths and weaknesses. However, caution must be exercised in the selection of media channels. The usage of traditional media such as magazines, radio, and television must be carefully considered because these traditional marketing channels are becoming less appealing and less effective. Managers need to be very selective in choosing magazines, TV channels, and radio channels that are appealing to Millennials in order to increase the effectiveness of their CRM advertisements.

Similarly, promoting CRM via modern media must also be undertaken with caution. Companies should avoid sharing uninteresting and unnecessary events or news that may generate a negative response among the audience. To enhance the

Table 2 Results of independent sample *t*-tests and descriptive statistics for Millennials' attitude toward CRM, Trust in CRM, and Brand Loyalty by CRM advertisement type

	CRM advertisement								
	Social media ads			Magazine ads			95% CI for mean		
Variable	M	SD	*n*	M	SD	*n*	difference	*t*	df
Attitude toward CRM	4.083	0.505	72	4.123	0.561	63	−0.221, 0.142	0.666	133
Trust in CRM	3.922	0.501	72	3.943	0.563	63	−0.211, 0.156	0.822	133
Brand loyalty Intention	3.556	0.579	72	3.706	0.608	63	−0.318, 0.107	0.144	133

Source: Authors' own calculations

effectiveness of modern media, companies need to be innovative in the approaches they adopt to capture the audiences' attention and to draw traffic to their websites and increase the number of likes and shares of posts among audiences that today are located all over the world. Companies may also consider taking advantage of influencer marketing. Influencers are able to engage audiences who then follow them across various social media sites. Thus influencers can become very powerful CRM campaign advocates. Influencers, just like celebrities, are able to increase the number of likes and tweets very quickly and can engage audiences. In short, companies have to find ways to create more engaging and interesting events and posts that will be shared among social media users so that more users become aware and supportive of their CRM campaigns.

5 Conclusion

The increase in the number of media channels available to promote CRM initiatives has resulted in a huge challenge for CRM campaign managers. The findings of this study revealed that the effect of traditional and modern media on consumer response is more or less similar. Hence, CRM promotions should make use of both traditional and modern media channels. Social media provides a fantastic space in which to create an online community for brands and causes while traditional offline media channels have always served as a reliable platform for all kinds of marketing campaigns including CRM campaigns. Social media is another attractive avenue through which companies can invite Millennials to participate in social media interactions, including likes, comments, and shares via sites such as Facebook, Twitter, Instagram, Pinterest and many more. Many brands have already successfully promoted their CRM campaigns across Facebook, Twitter, and Instagram to attract new followers and build an online community for social causes.

However, social media sites, even with their many advantages, have not replaced traditional media channels. Rather, they are complementary to traditional media channels. Traditional offline media channels can be used in combination with modern media channels in order to maximize the effect of CRM campaigns on the target audience, especially Millennials. The best CRM campaigns will make use of multiple media channels to maximize the effectiveness of each channel. Hence, using modern media in conjunction with traditional media to promote CRM would maximize the impact of CRM campaigns on Millennials' response to CRM campaigns.

References

Adkins, S. (2000). *Cause-related marketing: Who cares wins*. Oxford: Elsevier.

Barnes, N. G. (1992). Determinants of consumer participation in cause-related marketing campaigns. *American Business Review, 10*(2), 21–24.

Barone, M. J., Miyazaki, A. D., & Taylor, K. A. (2000). The influence of cause-related marketing on consumer choice: Does one good turn deserve another? *Journal of the Academy of Marketing Science, 28*(Spring), 248–262.

Berglind, M., & Nakata, C. (2005). Cause-related marketing: More buck than bang? *Business Horizons, 48*, 443–453.

Bigne-Alcaniz, E., Perez, C., Mafe, R., & Blas, S. (2012). Cause-related marketing influence consumer responses: The moderating effect of cause-brand fit. *Journal of Marketing Communications, 18*(4), 265. https://doi.org/10.1080/13527266.2010.521358.

Bucic, T., Harris, J., & Arli, D. (2012). Ethical consumers among the millennials: A cross-national study. *Journal of Business Ethics, 110*, 113. https://doi.org/10.1007/s10551-011-1151-z.

Cone Communication. (2013). *Cone Communication* [Online]. Accessed August 2, 2017, from http://www.conecomm.com/2013-cone-communications-social-impact-study-pdf/

Cone Communications. (2014). *Cone Communications* [Online]. Accessed July 20, 2017, from http://www.conecomm.com/research-blog/2014-cone-communications-digital-activism-study

Cone Communications. (2015). *Cone Communications* [Online]. Accessed August 2, 2017, from http://www.conecomm.com/2015-cone-communications-millennial-csr-study-pdf/

Cone Communications. (2017). *Cone Communications* [Online]. Accessed August 21, 2018, from http://www.conecomm.com/2017-cone-communications-csr-study-pdf/

Coric, D. S., & Dropiljic, M. (2015). Consumers' attitudes towards cause-related marketing. *Economic Sciences, 62*(3), 343–356.

Cui, Y., Trent, E. S., Sullivan, P. M., & Matiru, G. N. (2003). Cause-related marketing: How generation Y responds. *International Journal of Retail and Distribution Management, 31*(6), 310–320.

Hartmann, M., Klink, J., & Simons, J. (2015). Cause-related marketing in the German retail sector: Exploring the role of consumers' trust. *Food Policy, 52*, 108–114.

Hyllegard, K. H., Yan, R. N., Ogle, J. P., & Attmann, J. (2011). The influence of gender, social cause, charitable support, and message appeal on gen Y's responses to cause-related marketing. *Journal of Marketing Management, 27*(1–2), 100–123.

IEG Sponsorship Report. (2017). *IEG sponsorship report* [Online]. https://www.nielsen.com/ca/en/insights/news/2015/nielsen-tv-the-value-of-corporate-social-responsibility.html

McDaniel, C., Lamb, C. W., & Hair, J. F. (2013). *Introduction to marketing*. Ohio: South-Western CENGAGE Learning.

Mititelu, C., Fiorani, G., & Mariani, S. (2014). Cause related marketing: Armani initiative 'acqua for life'. *International Review on Public and Nonprofit Marketing, 11*, 285. https://doi.org/10.1007/s12208-014-0118-z.

Mohamed Anuar, M. (2011). *Impact of structural elements on cause-related marketing evaluation*. Unpublished PhD thesis, Universiti Sains Malaysia.

Mohamed Anuar, M., & Osman, M. (2016). Corporate social responsibility: Cause-related marketing. In M. Marimuthu & S. H. Hassan (Eds.), *Consumption in Malaysia: Meeting of new changes* (pp. 159–173). Penang: USM.

Nielsen. (2015). *The Nielsen* [Online]. Accessed August 2, 2017, from https://www.nielsen.com/ca/en/insights/news/2015/nielsen-tv-the-value-of-corporate-social-responsibility.html

Pileliene, L., & Grigaliunaite, V. (2016). Influence of print advertising layout complexity on visual attention. *Eurasian Business Review, 6*(2), 237–251.

Schroeder, J. (2017). *Forbes* [Online]. Accessed September 3, 2018, from https://www.forbes.com/sites/julesschroeder/2017/10/31/how-to-tap-into-the-millennial-200-billion-buying-power-with-social-media/#3a9317091161

Smith, C. (1994). The new corporate philanthropy. *Harvard Business Review, 72*(3), 105–116.

Unilever. (2017). *Unilever* [Online]. Accessed August 2, 2017, from https://www.unilever.com/news/press-releases/2017/report-shows-a-third-of-consumers-prefer-sustainable-brands.html

Varadarajan, P. R., & Menon, A. (1988). Cause-related marketing: A co-alignment of marketing strategy and corporate philanthropy. *Journal of Marketing, 52*(3), 58–74.

Webb, D. J., & Mohr, L. A. (1998). A typology of consumer responses to cause-related marketing from skeptics to socially concerned. *Journal of Public Policy & Marketing, 17*(2), 226–238.

Demographic Determinants of Consumer Ethnocentrism on the Food Market in Poland

Renata Nestorowicz, Anna Rogala, Ewa Jerzyk, and Bogna Pilarczyk

Abstract In the age of increasing globalization and more and more frequently observed xenophobic tendencies, the ethnocentric attitudes of consumers are getting more attention of researchers. The chapter presents demographic determinants of Polish consumers' ethnocentric attitudes on the food market. In the second half of 2016, surveys were carried out among inhabitants of Polish cities, with the aim of determining ethnocentric attitudes toward Polish national food as well as Polish regional food. Direct structured interviews were conducted with respondents responsible for food purchases. The results obtained are representative for residents of Polish cities with over 50 thousand inhabitants. The analysis of determinants refers to both national and local type of ethnocentrism, but special attention is paid to the second one. The findings show which demographic determinants are most correlated with ethnocentric attitudes. The results obtained are presented in comparison with former studies. Moreover, the authors developed recommendations for adjusting the food producers' marketing communication to the expectations of consumers representing various levels of ethnocentric attitudes.

Keywords Determinants of consumer ethnocentrism · Food market · Local food

1 Introduction

Two different tendencies can be observed in today's food market. On the one hand, growing globalization contributes to the mass-production and increasing standardization of food products (Murdoch and Miele 1999; O'Hara and Stagl 2001; Von Braun and Díaz-Bonilla 2008; Watts and Goodman 2005). As a result, a big number of consumers eat food products delivered from different parts of the country, the

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continent, or the world at the expense of the products from their own region. On the other hand, research shows that consumers place more and more emphasis on the quality of this category of products (Białoskurski 2012; Lazaridis and Drichoutis 2005; Murdoch et al. 2000; Pilarczyk and Nestorowicz 2010). Therefore, a growing number of people oppose the mass-produced, standardized food, in favor of its less processed, healthier, local alternatives (Ilbery et al. 2006; and Krystallis and Chryssohoidis 2005; Lang and Heasman 2004; Pollan 2006; Schlosser 2001; Seyfang 2008). The motivation for turning to the local offer of food products is nonetheless far from homogeneous and is not limited to applying the health and the quality criteria. There are various criteria for the choice of this type of food products. It seems that a particularly interesting question is whether choosing local food by consumers is related to their ethnocentric attitudes.

The chapter will analyze demographic determinants affecting both forms of ethnocentrism, focusing on the local ethnocentrism. The aim of the chapter is to determine the level of impact of demographic determinants on food consumers' ethnocentric attitudes. This chapter focuses on ethnocentrism in the food market in Poland, while previous studies most often concerned ethnocentrism in general. In addition, the research results presented in the chapter focus on local ethnocentrism, that is preferential attitudes toward local food and not national food, as it is the case in most of the previously published works. We will present a review of the literature on ethnocentrism and its determinants. Then we will describe our study: methodology, results, and conclusion. The CAPI method was used, based on structured direct interviews conducted among 577 inhabitants of big cities (over 50 thousand inhabitants), responsible for food purchases for their households.

2   Literature Review

The empirical study on which this chapter is based also requires adopting a broader perspective for the analysis of the studied issues, on the basis of the available literature. The first step must be the presentation of definitions of key concepts, such as: consumer ethnocentrism, ethnocentric attitudes, local products, and regional products. Unfortunately, these concepts are not explicitly defined in literature, which may lead to misinterpretation of the research results. Therefore, an overview of essential definitions has been prepared, with a clear indication of which one has been adopted for this chapter.

In spite of dynamic globalization and the process of standardization of markets, consumers representing different cultural backgrounds still reveal a variety of attitudes, views, values, and preferences (Bojei et al. 2010), which influence their purchase decisions. One of such attitudes is consumer ethnocentrism, i.e., preference for products of the native origin, emphasizing their positive features in comparison to those of imported products and rejecting foreign products (Szromnik and Wolanin-Jarosz 2013).

Ethnocentrism is a sociological concept which was coined over a century ago. It assumes preference for everything originated in one's own culture, as opposed to things created in different cultures (Nowacki 2014; Jiménez-Guerrero et al. 2014). In the 1970s scientists began to use the term ethnocentrism in relations to market behavior and formulated the term: consumer ethnocentrism, which means the preference for domestic products and not foreign ones (Maison and Baran 2014; Sajdakowska 2003). According to some researchers, consumer ethnocentrism refers to consumers' responsibility and moral attitudes, whereas it can be associated with overestimation of the quality of domestic origin products and underestimation of foreign product values (Watson and Wright 2000; Shimp and Sharma 1987).

At that time the popular scale for measuring ethnocentrism CETSCALE was created by Shimp and Sharma (1987). In the construction of the CETSCALE they took into account such aspects related to the choice of local products, as: feeling of responsibility, loyalty, obligation, or morality. According to Lindquist et al. (2001), 17 of the statements from CETSCALE refers to the four issues: "harms local economy," "caused loss of jobs," "is unpatriotic," and "is connected to the availability of the product." Looking at these factors as a whole we can say that they refer to either the patriotic attitude (e.g., pro-Polish), or the fear of import, i.e., anti-import attitude. All in all, ethnocentric consumers have an opinion that buying imported products is wrong for economic reasons (it causes rise in unemployment, weakens the domestic economy), emotional reasons (pride of their native products, national pride, affirmation of their own culture and its products, along with the depreciation of other cultures), as well as moral reasons (Figiel 2004).

Other authors dealing with consumer ethnocentrism only point to the buyers' conviction that domestic products are better than foreign ones (Dziadkiewicz-Ilkowska 2010). However, the reason why consumers choose domestic products is not only their belief that they are of a better quality than foreign ones. The preference for domestic products results also from anti-foreign and anti-import attitudes. Consumers choose domestic products even if they are more expensive and of a lower quality.

Factors shaping consumer ethnocentrism can be divided into three groups (de Ruyter et al. 1998; Shimp and Sharma 1987; Figiel 2004):

- Psychosocial factors:

  – Openness to a foreign culture
  – Patriotism
  – Conservatism understood as attachment to tradition
  – Collectivism/individualism of a given culture

- Demographic factors:

  – Age
  – Gender
  – Education
  – Income

- Factors reducing or strengthening ethnocentrism:

  – Perceived indispensability of a product
  – Perceived threat from foreign producers

Detailed specification of individual factors determining the intensity of the ethnocentric attitude was presented, among others, by Szromnik and Wolanin-Jarosz (2014). It is worth emphasizing that in many studies a diversified impact of individual demographic determinants on consumers' ethnocentric attitudes was observed. Detailed specification of the impact of such determinants as age, gender, educational background, income or place of residence was presented by Hat (2016). Practically in relation to all determinants (excluding the place of residence), the results were not explicit. Diversified correlations between those determinants and the level of ethnocentrism may arise, among others, from the diversified methodology, surveyed market (both in terms of products and in geographical terms), or time during which the survey was carried out. The level of ethnocentrism is also affected by the region in which consumer surveys are performed (Nestorowicz and Kaniewska-Sęba 2014). In the subsequent part of the analyses, the authors will deal with the verification of demographic determinants' impact on ethnocentric attitudes of inhabitants of large Polish cities in relation to foodstuffs.

3 Research Method and Characteristics of Respondents

In October 2016, quantitative surveys on the representative group of Poles residing in large cities were carried out (above 50 thousand inhabitants). The survey was commissioned to the Kantar TNS company. The questionnaire survey prepared was incorporated onto an omnibus type survey. The CAPI method of structured direct interviews was used. Interviews were conducted with 577 respondents who are responsible for food purchases in households or do such purchases regularly, live in cities from 50 thousand inhabitants and are aged over 20. The characteristics of respondents are presented in Table 1.

In the first part of the survey, respondents were asked how important for them is the information that the food they purchase originating from Poland and from the region where they live. Subsequently, five statements based on the CETSCALE were used, however, tailored to the food market in local, instead of countrywide terms. The statements were the following:

- I prefer to buy food from my region rather than from other regions of Poland.
- By buying food from local producers, I support local workplace.
- When I buy food from local producers, I support the development of the local economy.
- I am willing to pay more for food produced in the region I live.
- Food from local suppliers is of higher quality than this from other regions of Poland.

Table 1 Characteristics of respondents

Features	Sample structure [%]
Gender:	
Female	64.5
Male	35.5
Age	
20–29	13.7
30–39	20.8
40–49	15.8
50–59	16.3
60+	33.4
Marital status:	
Single	16.3
Married/partnership	57.9
Divorced/in separation	11.8
Widower/widow	14.0
Number of persons in the household:	
1	24.4
2	41.1
3	19.4
4	12.0
5 and more	3.1
Education:	
Primary	9.2
Vocational	23.1
Secondary and post-secondary	43.5
University	24.3
Place of residence:	
City with 50 thousand—99 thousand inhabitants	20.1
City with 100 thousand—199 thousand inhabitants	22.7
City with 200 thousand—499 thousand inhabitants	22.0
City with 500 thousand and more inhabitants	21.5
Warsaw (Warszawa)	13.7
Professional activity:	
Employed	59.8
Unemployed	40.2
Social-professional group:	
Managers/specialists	10.7
Private entrepreneurs	1.7
Employees of administration and services	27.9
Blue-collar workers	19.1
Farmers	0.3
Housewives/does not work, deals with house	5.2
Retired/pensioners	29.1
Pupils and students	1.2
Unemployed	4.7

Source: Own work based on a survey

Respondents presented their attitude toward each of the statements according to the 5-stage Likert scale.

4   Results

While analyzing the data obtained, it can be stated that for respondents, information that food bought by them originates from Poland is more important than information that it is produced in the region where they live (Fig. 1).

The data obtained allow for conclusion that no statistically significant differences occurred in groups of respondents distinguished due to: gender, age, marital status, size of household, number of children in the household, income. On the other hand, statistically significant differences were found in responses of persons with various

Fig. 1 When you choose food—how important is the information. Scale: 1–5, 1—not at all important, 5—very important. Source: Own work based on a survey

Table 2 Influence of the educational level on the interest in information concerning the origin of food

	The educational level			
The origin of food	Primary	Vocational	Secondary and post-secondary	University
Food produced in Poland	3.55	3.90	4.06	4.16
Local food	2.98	3.49	3.66	3.74

Source: Own work based on a survey

Table 3 Influence of the city size on the interest in information concerning the origin of the food

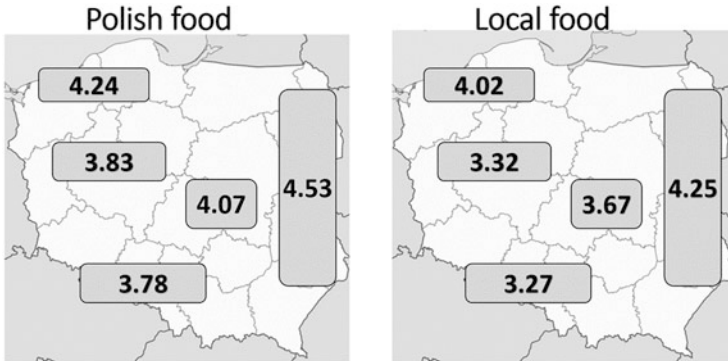|	The city size (number of inhabitants)		
The origin of food	50,000–99,000	100,000–499,000	500,000 and more
Food produced in Poland	3.67	4.13	4.02
Local food	3.33	3.69	3.58

Source: Own work based on a survey

Fig. 2 Geographical diversification of the level of interest in origin of food from Poland and from the specific region. Source: Own work based on a survey

level of education (Table 2), living in cities of various sizes (Table 3) and among inhabitants of various regions (Fig. 2).

The higher the respondents' education, the more attention they paid to information whether food originates from Poland as well as whether it is produced in the specific region.

While referring to the size of cities of respondents' residence, representatives of cities with 50,000 to 99,000 inhabitants paid least attention to the Polish or regional origin of foodstuffs.

Information concerning the origin of food was most important for inhabitants of Eastern and Northern Poland. On the other hand, inhabitants of Western and South-Western Poland showed least interest in such information. It is worth noting that besides demographic factors, purchases of ecological food significantly influenced the level of interest in the product origin. The more frequently consumers bought ecological food, the more interested they were in information concerning the origin of food, both local and national. It may confirm higher consumer awareness and knowledge of this group of respondents. In order to identify the attitude of respondents to food originating from the specific region, they were asked to present their opinion on five statements. The average results for the responses obtained are presented in Table 4.

On the basis of the surveys conducted, it can be stated that in local terms the ethnocentric attitude of respondents is at a relatively high level. This ethnocentrism was developed, to the greatest extent, by attitudes supporting the development of local economy and local jobs. Whereas respondents declare that buying food from local producers supports local jobs and development of the local economy, their propensity to pay a higher price for regional products is much lower. They also do not show specific preferences in the scope of regional food. Thus, it can be stated that respondents notice and understand the impact of local food purchase on the development of a given region; however, this is not fully reflected in their increased propensity to purchase such food.

Table 4 Determinants of ethnocentric attitude in local terms

Statements	Average
I prefer to buy food from my region rather than from other regions of Poland.	3.65
By buying food from local producers, I support local workplace.	3.97
When I buy food from local producers, I support the development of the local economy.	3.96
I am willing to pay more for food produced in the region I live.	3.31
Food from local suppliers is of higher quality than this from other regions of Poland.	3.47

Scale 1–5 where: 1—I definitely disagree, 5—I definitely agree
Source: Own work based on a survey

While analyzing respondents' answers in various groups distinguished in terms of demographic criteria, it can be stated that the following determinants of ethnocentrism turned out statistically insignificant: gender, marital status, size of household, number of children in the household, income. On the other hand, the following significantly significant relations were found:

- Inhabitants of the Eastern region showed the highest local ethnocentrism.
- The highest local ethnocentrism was demonstrated by the youngest respondents (20–29); respondents aged 40–49, i.e., persons whose childhood fell in the 1970s and 1980s, are least ethnocentric in local terms.
- Persons with primary education are least ethnocentric in local terms.
- Buyers of organic food are more ethnocentric locally than non-buyers.

Compared to the study of ethnocentrism in general, determinants such as gender, economic status and income were less important in our research. Interestingly, the youngest people, who are usually the least ethnocentric, turned out to be the most positively oriented toward local food (they were the most local ethnocentric group).

5   Conclusions

Demographic features of food consumers in Poland do not have a significant impact on their ethnocentric attitudes. Exceptions include the level of education and the place of residence. Behavioral and social factors have more influence on ethnocentrism, particularly in local terms. It is also worth noticing that consumers are more interested in information on products origin from Poland, rather than from the specific region. Moreover, the attribute of the local origin of a product does not translate into consumer's propensity to pay a higher price for it. Therefore, food producers should highlight Polish origin of a product in their marketing communication. Considering the attitudes of respondents toward local food, building communication based on information that food originates from a given region may, for the time being, fail to bring expected results. Ethnocentric tendencies in national terms were recognized in Poland by producers and distributors of food who stress

Polish origin of products offered by them or raw materials from which the products are made. Such approach is presented not only by Polish enterprises but also companies with foreign capital, such as Biedronka (Jeronimo Martins) or Danone. On the other hand, few enterprises emphasize the attractiveness of their products by their regional nature and familiarity, which so far has not affected building of competitive advantage.

Attempts aimed at introducing national geographical denominations suggesting that a product originates from Poland are more and more common. In the era of increasing patriotic, or even nationalist tendencies, it seems that ethnocentric attitudes will increase, at least in a part of the society.

References

Białoskurski, S. (2012). Wpływ wybranych atrybutów produktu na decyzje zakupowe nabywców finalnych produktów spożywczych. In S. Makarski & P. Cyrek (Eds.), *Perspektywy rozwoju marketingu. Klient – konsumpcja – handel, Handel Wewnętrzny, (IX-X) II* (pp. 268–275). Warszawa: Instytut Badań Rynku, Konsumpcji i Koniunktur.

Bojei, J., Tuah, A., Normah, S., Alwie, A., & Ahmad, M. (2010). Local vs. foreign made: Are Malaysians ethnocentric? *The IUP Journal of Marketing Management, IX*(3), 6–23.

de Ruyter, K., van Birgelen, M., & Wetzels, M. (1998). Consumer ethnocentrism in international services marketing. *International Business Review, 7*(2), 185–202.

Dziadkiewicz-Ilkowska, A. (2010). Wpływ etnocentryzmu konsumenckiego na decyzje konsumenta. In Z. Kędzior & R. Wolny (Eds.), *Konsument w Unii Europejskiej – podobieństwa i różnice [Consumer in the European Union – similarities and differences]* (pp. 63–76). Katowice: CBiE AE.

Figiel, A. (2004). *Etnocentryzm konsumencki. Produkty krajowe czy zagraniczne*. Warszawa: Polskie Wydawnictwo Ekonomiczne.

Hat, A. (2016). Consumer ethnocentrism in Polish service sector: A study of socio-demographic determinants. In M. Bilgin & H. Danis (Eds.), *Entrepreneurship, business and economics* (Eurasian studies in business and economics) (Vol. 1, pp. 427–447). Cham: Springer.

Ilbery, B., Watts, D., Simpson, S., Gilg, A., & Little, J. (2006). Mapping local foods: Evidence from two English regions. *British Food Journal, 108*(3), 213–225.

Jiménez-Guerrero, J. F., Gázquez-Abad, J. C., & del Carmen Linares-Agüera, E. (2014). Using standard CETSCALE and other adapted versions of the scale for measuring consumers' ethnocentric tendencies: An analysis of dimensionality. *BRQ Business Research Quarterly, 17*, 174–190.

Krystallis, A., & Chryssohoidis, G. (2005). Consumers' willingness to pay for organic food: Factors that affect it and variation per organic product type. *British Food Journal, 107*(5), 320–353.

Lang, T., & Heasman, M. (2004). *Food wars*. London: Earthscan.

Lazaridis, P., & Drichoutis, A. (2005). Food consumption issues in the 21st century. In P. Soldatos & S. Rozakis (Eds.), *The food industry in Europe* (pp. 21–33). Athens: Agricultural University of Athens.

Lindquist, J. D., Vida, I., Plank, R. E., & i Fairhurst, A. (2001). The modified CETSCALE: Validity tests in the Czech Republic, Hungary, and Poland. *International Business Review, 10*(5), 505–516.

Maison, D., & Baran, T. (2014). Dobre, bo (nie)polskie? O uwarunkowaniach i konsekwencjach etnocentryzmu konsumenckiego. *Marketing i Rynek, 10*, 2–10.

Murdoch, J., & Miele, M. (1999). 'Back to nature': Changing 'worlds of production' in the food sector. *European Society for Rural Sociology Sociology Ruralis, 39*(4), 465–483.

Murdoch, J., Marsden, T., & Banks, J. (2000). Quality, nature, and embeddedness: Some theoretical considerations in the context of the food sector. *Economic Geography, 76*, 107–125.

Nestorowicz, R., & Kaniewska-Sęba, A. (2014). Zastosowanie CETSCALE do pomiaru etnocentryzmu konsumenckiego na rynku produktów żywnościowych w Polsce. *Marketing i Rynek, 6*, 501–517.

Nowacki, R. (2014). Etnocentryzm konsumencki a kultywowanie polskości w reklamie. *Handel Wewnętrzny, 3*(350), 202–214.

O'Hara, S. U., & Stagl, S. (2001). Global food markets and their local alternatives: A socio-ecological economic perspective. *Population and Environment, 22*(6), 533–554.

Pilarczyk, B., & Nestorowicz, R. (2010). *Marketing ekologicznych produktów żywnościowych*. Warszawa: Oficyna a Wolters Kluwer business.

Pollan, M. (2006). *The Omnivore's dilemma: A natural history of four meals*. New York: Penguin.

Sajdakowska, M. (2003). Etnocentryzm konsumencki – czynnik wpływający na decyzje nabywcze konsumentów na rynku żywności. *Acta Scientarium Polonarum, Technologia Alimentaria, 2*(1), 177–184.

Schlosser, E. (2001). *Fast food nation: The dark side of the all-American meal*. New York: Perennial.

Seyfang, G. (2008). Avoiding Asda? Exploring consumer motivations in local organic food networks. *Local Environment, 13*(3), 187–201.

Shimp, T. A., & Sharma, S. (1987). Consumer ethnocentrism: Construction and validation of the CETSCALE. *Journal of Marketing Research, 24*(3), 280–289.

Szromnik, A., & Wolanin-Jarosz, E. (2013). Diagnoza poziomu etnocentryzmu konsumenckiego Polaków z wykorzystaniem metody CETSCALE. *Konsumpcja i Rozwój, 1*, 98–111.

Szromnik, A., & Wolanin-Jarosz, E. (2014). Etnocentryzm konsumencki na zglobalizowanym rynku – czynniki i procesy kształtowania (cz. 2). *Marketing i Rynek, 5*, 2–10.

Von Braun, J., & Díaz-Bonilla, E. (2008). *Globalization of food and agriculture and the poor*. Washington, DC: International Food Policy Research Institute (IFPRI). Issue briefs 52.

Watson, J. J., & Wright, K. (2000). Consumer ethnocentrism and attitudes toward domestic and foreign products. *European Journal of Marketing, 34*(9/10), 1149–1166.

Watts, D., & Goodman, M. J. (2005). Agrarian questions: Global appetite, local metabolism: Nature, culture, & industry in fin-de-Siecle agro-food systems. In D. Watts & M. J. Goodman (Eds.), *Globalising food: Agrarian questions and global restructuring* (pp. 1–24). New York: Routledge.

Information Behaviors of Modern Consumers: The Case of Polish Food Market

Anna Rogala

Abstract The latest technological and social changes as well as overwhelming flow of various types of information to consumers have exerted a major impact on their activity regarding dealing with marketing messages. They perform different roles in the marketing communication process, as they are recipients, opinion leaders, brokers, content selectors, cocreators, and senders. However, they still need to select valuable information from the communication noise in order to make purchase decisions, though. The main objective of this chapter is to analyze the information behaviors of modern consumers. This study presents the major factors influencing consumers' behaviors in case of collecting and dealing with marketing information and shows its implications for the organizations' marketing communication activities. Four hundred and eighty-one structured direct interviews were conducted in Poland with persons responsible for food purchases in households. Correlations and cluster analyses were executed. On the basis of the results consumers' segmentation in relation to information gathering and attaching importance to opinions acquired while taking decisions on the purchase of food was done. The classification into five clusters was selected, named: Hesitant seekers (22% of all respondents), Independent seekers (15.8%), Observers (21.8%), Information relativists (22.1%), and Skeptics relying on others (18.3%). The description of main characteristics was done for each segment.

Keywords Information behaviors · Marketing communications · Information society · Network society

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1   Introduction

Communication processes taking place in contemporary societies are strongly determined by technological and social transformations. Such phenomena as information overload, creation of network society, virtualization of life, return to the redefined tribal attitude and dynamic ICT development cause that the transfer of communication, also that of marketing nature, has never before been so simple and, at the same time, so difficult. On the one hand, modern technologies enable fast reaching the consumers with information using many communication channels and allow for immediate interaction. On the other hand, they jeopardize the process of information acquisition by consumers through continuously overloading them with various types of messages. This makes people complain more and more frequently about the mass of information they do not need and problems related to reaching the information they search for in the context of purchasing decisions they take. Due to this fact, enterprises willing to carry out effective communication activities in order to reach potential clients with the offer should know the rules and paths of their information behaviors.

The objective of the considerations undertaken in this chapter was the analysis of consequences of societies' networking, virtualization of life, and dynamic ICT development for information behaviors of contemporary consumers. The factors affecting information behaviors of entities in relation to the acquisition and processing of information of marketing nature were discussed as well, simultaneously indicating its implications for communication activities of the organization. The chapter fills the gap in the state of knowledge about consumers' information behaviors in relation to marketing communications' messages on the food market.

Four hundred and eighty-one structured direct interviews related to information activity of consumers on the food market were conducted with persons responsible for food purchases in households in Poland. In the context of purchases of food products information needed was usually transferred by family and friends. Third consecutive source of information was the producers. Consumers took into account statements of other unknown buyers least commonly. The results were the same for the reliability of sources of information concerning food products. The respondents recognized family and friends as the most reliable sources of information concerning food products. The theory of three degrees of influence should be referred to, according to which persons relatively close to us have an impact on our behaviors. However, information originating from the producers was defined as reliable as well. Less confidence was shown in advertisements as a source of information about food products. The low position of unknown consumers, including virtual ones as a source of information may seem surprising, taking into consideration virtualization of life and popularity of websites with recommendations of products and services. The majority of respondents attached great importance to the users' opinions about a product. It confirms the fact that other consumers represent an important source of information, often more important than the producer or the seller.

Using the cluster analysis consumers' segmentation in relation to information gathering and attaching importance to opinions acquired while taking decisions on the purchase of food was done. Analysis was based on the criteria associated with including information on products and producers originating from various sources in the process of purchasing decision-making and assessment of reliability of the aforementioned sources. The classification into five clusters was selected, named: Hesitant seekers (22% of all respondents), Independent seekers (15.8%), Observers (21.8%), Information relativists (22%), and Skeptics relying on others (18.3%). The description of main characteristics was done for each segment.

2 Communication in Network Society

Until recently, the contemporary society was called the information society, i.e., the society where information plays the key role and daily functioning of its members requires using various sorts of information in each sphere of life. In principle, the activity of information society is based on using the ICT solutions and, consequently, the sophisticated information processing and communication means (Goban-Klas and Sienkiewicz 1999). The idea is adopted that the information society has evolved and has become the foundation of the network society defined in relation to communication networks which shape its organization at each of the levels—individual, group, organization, and society as a whole (Castells 2000; van Dijk 2012). The network society is the global society; however, it does not mean its homogeneity. In terms of the structure, each contemporary society is the network society, however, specific at least in the context of culture (Castells 2009).

The network society demonstrates two basic features. The first one, stemming from the development of communication technologies, relates to organizing the society into strongly affecting, complex information links. Importantly, networks based on the aforementioned solutions change social structures (Castells 2000; Baranowski 2012). On the other hand, the second feature relates to the structure of the network society which comprises nodes (individuals, organizations, or communities) linked by communication, social relations as well as those institutionalizing and organizing the flow of the authority (Fuhse 2009; Stachowicz 2011). In the network society, all those individuals are connected with each other via communication networks, recognized as a certain type of communication vehicle (Schultz-Jones 2009; Muraszkiewicz 2005). In this case, analyses focus around the communication method rather than on its content. It should be stressed that according to the Castells' opinion, one more feature of the network society is significant, namely, its ability to "deliberately alter its own path of development, for better or worse" (Stalder 2006).

The strength of the network society emerged from the development of information technology, in particular the Internet and the practices associated with it. The virtual communication space undergoes intensive transformation and is recognized as extremely dynamic. Due to this fact, activities taking place within it cannot be

treated as once stabilized (Para 2012). The mediatization of the network society is associated, on the one hand, with certain threats (such as, for example, digital addiction) and, on the other hand, with benefits. The reason is that members of the network society use more and more often the advantages of technology for the needs of participatory, democratic, or culture-creating measures (Śliwińska 2017).

The characteristic feature of complicated communication structures created by networks is the increased range of individuals' impact on its remaining participants, whereas this phenomenon can be most fully observed in the virtual space (Rogala 2017a, b). At the same time, it is worth stressing that owing to the virtual communication not only the speed of reaching information increases but also the dynamics of communication and the pluralism of opinions expressed (Castello et al. 2013). Potential recipients have a possibility to choose which of the presented positions is closest to them and then share it with others, developing or affecting opinions of other persons. Networking of an individual determines the strength of the aforementioned impact (Para 2012). At this point, it is worth bringing closer two theories associated with the mutual impact of network society members, namely the theory of six degrees of separation and the theory of three degrees of influence. In the light of the first of them, all people in the world are associated with each other, on average, by six degrees of separation. If you want to reach any person, it is necessary to take six steps, and thus, all individuals of the network remain relatively close to each other (Watts 2004). On the other hand, the second theory is connected with spreading of influences in social networks which takes place in accordance with the principle of three degrees of influence. Attitudes, feelings, and behaviors of an individual affect his/her friends (first degree), friends of his/her friends (second degree) and friends, friends of his/her friends (third degree), and the aforementioned influence is of reciprocal nature (Christakis and Fowler 2011). The features and properties of the network society described above significantly affect information behaviors of contemporary consumers.

3 The Essence and Types of Information Behaviors

Searching for information, its perception, creation, processing, or communication is an inherent element of everyday life of each human being. The activities mentioned above create the field of analysis for researchers dealing with information behaviors, at the same time, the interdisciplinary nature of this area should be emphasized. Information behaviors are studied, among others, by cognitivists, social psychologists, sociologists as well as specialists in social communication (Schultz-Jones 2009; Kamińska-Czubała 2013).

In opinion of T.D. Wilson, information behaviors comprise most commonly "the totality of human behavior in relation to sources and channels of information, including both active and passive information seeking, and information use" (Wilson 2000, p. 49). At the same time, he distinguishes information seeking behavior (purposive seeking for information as a consequence of a need to satisfy some

goal), information searching behavior ("micro-level" of behavior employed by the searcher in interacting with information systems of all kinds) and information use behavior (consisting of the physical and mental acts involved in incorporating the information found into the person's existing knowledge base) (Wilson 2000; Savolainen 2016). Thus, information behaviors represent the broadest category, comprising all elements referred to above, and their subject covers such aspects related to information as: its nature (precision, reliability, style, etc.), medium through which the information is broadcast, source of origin (sender) as well as circumstances of its discovery/acquisition (Ford 2015).

Information behaviors of individuals are affected by many factors. The most important ones are those associated with the culture and the environment a given person originates from (Spink and Heinström 2011). Nevertheless, the level of information competence is significant, determining the method of not only acquisition but also processing of the content. At the same time, it should be remembered that information behaviors constitute the basic determinant of information culture defining the scope of information competence the individual may acquire in the specific environment (Kamińska-Czubała 2013).

Many typologies of information behaviors can be found in the literature of the subject. Most of them focus around four areas: information gathering, response to information, individual management of information and its use (Godbold 2006; Cisek 2017; Wilson 2008). Information gathering may take the form of: active information gathering toward a goal, routine information gathering and picking up information by chance in the course of other activities. On the other hand, response to information comprises: sharing or spreading information, creating documents, telling other people, taking mental note (nonspecific goal or goal not imagined yet), avoiding or ignoring information, disputing or disbelieving information, hiding and/or destroying information. In turn, individual information management assumes its assessment and selection, elaboration of information, its processing as well as storage. Use of information can be referred to in the case of: information exchange, sharing and transfer; taking decision based on information; problem solving, performing the task, "handing the problem" as well as recovery or establishing the sense of reality.

The spectrum of information behaviors is very broad and comprises both measures bearing signs of active as well as those associated with information ignoring, i.e., passive (McKenzie 2003). This chapter will focus on the analysis of several of the aforementioned aspects with respect to consumers' information activity on the food market.

4   Information Behaviors of Consumers on the Food Market in Poland

In order to examine consumers' activity in the area of gathering, processing, and transfer of information related to food products as well as its sharing with others, 481 structured direct interviews were conducted with persons responsible for food purchases in households. The sample was selected based on the quota and the following selection criteria were adopted: gender, age, and size of respondents' place of residence. Taking into consideration the age and place of residence, the structure of the sample corresponded to the structure of the general population. In the sample, a higher percentage of women in relation to men was taken into account (71% female to 29% male) since women take decisions concerning the selection and purchase of food products more frequently. Respondents included persons aged from 18 to 83. Respondents aged 60+ constituted the highest percentage (24.4%), 20.9% of respondents were aged up to 29, 20.7% were aged between 30 and 39 and 18% between 50 and 59. The smallest number of respondents represented the age brackets from 40 to 49 (16.1%). Inhabitants of various size cities took part in the survey. Respondents of cities over 100 thousand inhabitants had the highest share in the examined sample (35.1%). The remaining groups represented, respectively, residents of cities with 50–99.9 thousand inhabitants (19.1%), 20–49.9 thousand (16%), 10–19.9 thousand (14.1%), 5–9.9 thousand (9.1%), and residents of cities over 5 thousand inhabitants (6.4%). Due to the limited volume of the chapter, the author will present herein only partial results of conducted studies associated with the issues announced earlier.

Gathering of information on food products by consumers was subject to the analysis. Over half of the respondents have declared that they easily choose such information which they need on the market (20.4% for the variant of response: "I definitely agree" and 37.4% for the "I rather agree" option), whereas over 60% have stated that they are able to verify the accuracy of information concerning food on their own (41% for the "rather yes" variant and 19.1% for "definitely yes").

The aspect important for the analysis of consumers' information is the sources of acquired information. In the context of purchases of food products, research is usually driven by information transferred by family and friends (in total, 78% for the "very often" and "rather often" option in the first case and 72% in the second one). On the other hand, food producers are the third consecutive source of information—53.4% of respondents use it very often or rather often. Consumers take into account statements of other buyers unknown to them least commonly—67.2% of respondents have stated that they do it rather rarely (35.6%) or very rarely (31.6%). Similar dependencies were observed in the case of acquisition of information concerning the producer. Respondents most commonly acquire it from family (62% of respondents declare that they do it very often or quite often) and friends (in total, 55.9% for both aforementioned variants). Information originating directly from the producer took the third place (32.6% for "very often" and "quite often" variants). Once again, unknown consumers have become the least popular source of

information (65.9% of respondents take them into account rather rarely or very rarely) (Rogala 2015, 2017a).

It has also been observed that respondents demonstrate considerable consistency in the context of selected information sources. Table 1 presents source of information considered while buying food products. In the majority of cases, the specific source serves as the place of acquisition of information on both products and producers. The strongest correlations between different sources used by respondents are highlighted in bold.

Respondents who more often take into account information on products obtained from the family while purchasing food products take family into account as a source of information on the company more often ($r = 0.630$). Similar correlations were observed for the following information sources: friends ($r = 0.567$), producer's employees ($r = 0.529$), sellers ($r = 0.618$), and advertisements ($r = 0.641$). Moreover, persons who take into account information on products acquired from friends rely on similar information obtained from family more often ($r = 0.744$). Such dependence also occurs in case of information on the company ($r = 0.812$). All relations between variables referred to should be recognized as strong or very strong (Rogala 2017a).

Taking into consideration the fact that great popularity of any sorts of services where products are evaluated and recommended is currently observed, low position of unknown consumers as a source of information may seem surprising. However, several reasons of such a state of affairs can be identified. First of all, food purchases, contrary to, e.g., purchases of industrial products, are rarely preceded by a long phase of acquisition and comparison of information. Thus, consumers take into consideration such information which is more easily available to them (family and friends) and which they come across while doing shopping (e.g., information placed by the producer on the packaging or in a leaflet). Moreover, food articles represent the specific category of products whose consumption is significant for an individual's welfare. As a consequence, a source of information unknown to consumers may be treated as unreliable. Another explanation of this phenomenon may be respondents' reluctance to admit that they acquire information from sources unknown to them, i.e., an error in declaration contained in answers provided by respondents.

In cognitive terms, it also seems essential to determine whether information acquired from various sources is not only taken into account by respondents but also important in the context of purchasing decisions taken. The majority of respondents (56.2%) attach great importance to what users say about a product. It confirms the fact that other consumers represent an important source of information, often more important than the producer or the seller. For 68.4% of respondents, friends' opinion concerning food is important (45.5% for the "rather yes" response variant and 22.9% for the "definitely yes" option). Similar results have been observed in case of opinion concerning a food producer (40.5% for the "rather yes" response variant and 18.1% for the "definitely yes" option). Respondents also listen to experts' opinion—their opinions on the product are taken into consideration by 62.1% of respondents (40.5% for "rather yes" and 21.6% for "definitely yes"), and

Table 1 Source of information taken into consideration while buying food products

		Information on products							Information on the company						
		From producers	From producer's employees	From the seller	From unknown consumers	From friends	From the family	From advertisements	From producers	From producer's employees	From the seller	From unknown consumers	From friends	From the family	From advertisements
Information on products	From producers	1	0.282**	0.192**	0.147**	0.194**	0.171**	0.150**	0.428**	0.116*	0.149**	0.115*	0.194**	0.218**	0.107*
	From producer's employees	0.282**	1	0.348**	0.469**	0.194**	0.140**	0.266**	0.219**	**0.529****	0.326**	0.441**	0.226**	0.221**	0.225**
	From the seller	0.192**	0.348**	1	0.285**	0.355**	0.267**	0.255**	0.300**	0.354**	**0.618****	0.277**	0.254**	0.209**	0.294**
	From unknown consumers	0.147**	0.469**	0.285**	1	0.252**	0.218**	0.284**	0.203**	0.360**	0.235**	**0.639****	0.261**	0.223**	0.272**
	From friends	0.194**	0.194**	0.355**	0.252**	1	**0.744****	0.239**	0.144**	0.281**	0.309**	0.256**	**0.567****	**0.488****	0.207**
	From the family	0.171**	0.140**	0.267**	0.218**	**0.744****	1	0.242**	0.158**	0.227**	0.211**	0.205**	0.475**	**0.630****	0.229**
	From advertisements	0.150**	0.266**	0.255**	0.284**	0.239**	0.242**	1	0.281**	0.241**	0.333**	0.266**	0.207**	0.199**	**0.641****
Information on the company	From producers	0.428**	0.219**	0.300**	0.203**	0.144**	0.158**	0.281**	1	0.372**	0.296**	0.235**	0.224**	0.207**	0.326**
	From producer's employees	0.116*	**0.529****	0.326**	0.360**	0.281**	0.227**	0.241**	0.372**	1	0.467**	0.492**	0.340**	0.302**	0.283**
	From the seller	0.149**	0.326**	**0.618****	0.235**	0.309**	0.211**	0.333**	0.296**	0.467**	1	0.356**	0.423**	0.339**	0.343**
	From unknown consumers	0.115*	0.441**	0.277**	**0.639****	0.256**	0.205**	0.266**	0.235**	0.492**	0.356**	1	0.360**	0.329**	0.312**
	From friends	0.194**	0.226**	0.254**	0.261**	**0.567****	0.475**	0.207**	0.224**	0.340**	0.423**	0.360**	1	**0.812****	0.246**
	From the family	0.218**	0.221**	0.209**	0.223**	**0.488****	**0.630****	0.199**	0.207**	0.302**	0.339**	0.329**	**0.812****	1	0.245**
	From advertisements	0.107*	0.225**	0.294**	0.272**	0.207**	0.229**	**0.641****	0.326**	0.283**	0.343**	0.312**	0.246**	0.245**	1

Source: Own elaboration based on the research

**Significance level $\alpha = 0.01$ (two-tailed)

*Significance level $\alpha = 0.05$ (two-tailed)

on the producer—by 56.8% (39.1% for "rather yes" and 17.7% for "definitely yes"). Respondents have declared that the opinion of Internet users is least important for them. In case of opinion concerning products, 37.4% of respondents ignore it (20.8% for the "rather no" variant and 16.6% for the "definitely no" option). On the other hand, opinions concerning food producer are not important for 39.5% of respondents (22.9% for the "rather no" variant and 16.6% for the "definitely no" option). A high percentage of responses of neutral nature was also recorded—38.5% for the significance of Internet users' opinion on products and 36%—on companies manufacturing them. Taking into consideration the growing role of virtual communication channels and sources, these results seem surprising. The reasons of such a state of affairs may be analogical as in the context of regularity of taking individual sources of information into account. The theory of three degrees of influence should be also referred to, according to which persons relatively close to us have an impact on our behaviors.

The respondents have also evaluated the reliability of various sources of information concerning food products. Information originating from family and friends was recognized as most reliable (respectively, 82.2% and 77.5% of indications for 5 and 4 aggregate scores). Information originating from producers was defined as reliable as well (48.5% for 5 and 4 scores). Respondents show the lowest level of confidence in information stemming from advertisements (in total, 46.5% indications for 1 and 2 scores). Interestingly, the highest percentage of hesitant respondents was recorded in the case of reliability of information coming from producer's employees expressing their opinions, e.g., on the Internet fora (46.2% of all responses), sellers (45.9%), and other consumers sharing their considerations on this issue on the Internet (42%). A relatively low assessment of Internet users' opinion reliability seems to be in contradiction to the predominance of virtual communication. On the one hand—as mentioned earlier—any portals which enable requesting for information from persons who acquired a given product or used the specific services, are very popular. On the other hand, Internet users' statements are accused that due to their apparent anonymity they may write anything, not necessarily presenting true information.

For the purpose of better management of the marketing communication process, consumers' segmentation in the context of information behaviors seems signifcant. In the process of segmentation particular attention should be given to information gathering and attaching importance to acquired opinions while taking decisions on the purchase of food. In this research the segmentation was performed with the use of k-means clustering. It was based on the criteria associated with including information on products and producers originating from various sources in the process of purchasing decision-making and assessment of reliability of the aforementioned sources. After conducting analyses, the classification into five clusters was selected. The clusters received the following names, respectively: Hesitant seekers (22% of all respondents), Independent seekers (15.8%), Observers (21.8%), Information relativists (22.1%), and Skeptics relying on others (18.3%) (Rogala 2017b).

Hesitant seekers take information reaching them from various sources into account. It is worth to note that in this group, as compared to other segments,

increased acquisition of information from advertisements recorded. Interestingly, the highest evaluation of reliability of sources in the segment described is recorded exactly for representatives of the closest environment and the lowest—for advertising. This may indicate a certain inconsistency in information behaviors and lack of coherence in the approach to the acquisition of information from sources regarded as least reliable. However, this can also show the awareness of impact of advertising content on their purchasing decision-making. Hesitant seekers declare the importance of integrity of companies producing food. This segment comprised mostly women (24.1% of the total number of female respondents), persons with primary education (57.1%) and those who poorly evaluate their economic situation (42.9%), with the average age being 40 (the lowest among all segments).

The next segment is called Independent seekers. They are driven by information originating from various sources while taking decision concerning the purchase of food products and assessing its reliability in a similar way (excluding advertising evaluated lower). In comparison to other segments, they are active in acquiring information from various sources and open to it. Nevertheless, while taking purchasing decisions they are rather driven by their own judgment of the situation. If inconsistent messages concerning a product or a producer reach them, they are still ready to purchase the goods. It is less probable if unfavorable opinions are expressed by experts. Ethical issues associated with integrity and social responsibility as well as proper treatment of employees by producers, are important for them. The average representative of this segment is 41 years old. Taking into account the overall sample, it is the least sizeable segment, not distinguishing against the background of others in terms of education level or economic situation.

Observers demonstrate neutrality in terms of approach to information originating from various sources. They consider content provided to them by the closest environment as the most reliable. However, it should be stressed that they do not have a negative attitude to other sources of information, but they do not necessarily make use of it while taking purchasing decisions. This group demonstrates rather observation of information spread than information search. Observers more often declare unlimited access to information and overloading with messages of advertising type. At the same time they give the highest rank to their ability in the scope of assessing the reliability of the content provided to them. In case any noncompliance of information reaching them is found, they are more eager to resign from the purchase. It happens when differences occur between experts' or friends' opinions and information received from the producer. This segment contains more persons with secondary education as well as those who assess their economic standing well or very well. Therefore, it is possible that more independent information and consumption-related behaviors could be encouraged by the feeling of financial security. The average age in this group is 45.

Information relativists selectively treat information itself and the sources it originates from. The high diversity in opinions concerning reliability of information sources could be observed in this segment. However, the nearest environment (family and friends) is always ranked higher and other unknown consumers of advertisements are always evaluated worse. In this context, it seems surprising that

they take into account opinions of unknown consumers or information flowing from producers' employees while taking purchasing decisions more frequently, as compared to the opinions expressed by family or friends. In the author's opinion, this arises from the relative approach to information acquisition. They use various hierarchies of factors determining the significance of content communicated, depending on the specific situation. Interestingly, representatives of this group seem to hold the skill of switching off to the receipt of messages, which is declared by low scores related to information overload or receiving excessive quantities of information of an advertising nature. If they acquire inconsistent information regarding the product or the producer, they are ready to take a risk and make a purchase. It happens more frequently, if the inconsistency is associated with information received from unknown Internet users. They are sensitive to issues related to producers' integrity and due treatment of employees. The average age in this segment (51) is the highest as compared to other groups. In this group, the highest percentage of men (27.9%), persons with vocational education (27.3%), and those assessing their economic situation as average (24.1%) was recorded.

The group of Skeptics relying on others declare that they acquire information on food products and their producers from various sources and take it into account while making purchasing decisions. However, they skeptically assess the ultimate impact of such information on purchases made. This attitude implies a certain inconsistency, resulting probably from the unawareness of impact of the content acquired on decisions taken. Their assessments of reliability of sources are usually significantly lower for the overall group of respondents and lower as compared to other groups. Skeptics relying on others consider information provided by the family, friends, and producers as most reliable. Still, they approach the reliability of sources and persons from whom they acquired certain information with reservation. They consider issues related to social responsibility and due treatment of employees as less important. The incompatibilities of information related to food products provided by the producer and other sources of information are not a very strong factor preventing them from the purchase. An average representative of this segment is 46 years old. In relation to all respondents, this group contains the highest number of persons with university degree (24.2%) and those assessing their economic situation as very good (10.3%).

Research shows that consumers have different approaches to information sources and to their usage in the decision-making process as well. The major differences between segments could be observed not in terms of the credibility of information sources' assessment, but of taking into account their content in the decision-making processes. An interesting result of the conducted research is the relatively low assessment of the Internet and Internet users' importance for making purchasing decisions on the food market. On the one hand, it can be caused by a lack of trust in anonymous sources, which are very common in virtual communication. On the other hand, respondents may declare that they do not take into account this content and sources, but in fact used them. It should be noted that this situation could result from the specificity of the food market as well, as it is still dominated with direct sales channels.

5   Conclusions

This chapter shows that information behaviors of contemporary consumers appear most prone to dynamic changes. It is associated with transformations of social and technological nature which have strengthened the position of consumers, their mutual interactions, and virtual communication channels. In their communication activities enterprises must take into account various roles fulfilled by existing consumers in the marketing communication processes, as well as impact of their opinion on information and purchasing behaviors of other consumers. This brings the necessity of reorienting the approach to organization communication with the environment from the process oriented to message sender to the process focusing on the recipient and his/her interaction with offerors of goods and services as well as with other consumers (Bawden 2006). Within the communication activities, it is also necessary to consider habits of individual segments of recipients in the context of acquisition and assessment of information reliability, in order to be able to influence the specific target group in the relevant manner.

References

Baranowski, M. (2012). Przyczynek do krytyki społeczeństwa sieciowego: od sieci społecznych do sieci wszystkich sieci [A contribution to the criticism of the network society: From social networks to the network of all networks]. In M. Baranowski & B. Mika (Eds.), *Społeczeństwo sieciowe – między wolnością a zniewoleniem: praca zbiorowa [Network society – between freedom and enslavement: Collective work]* (pp. 15–31). Poznan: Wydawnictwo Naukowe Wyższej Szkoły Nauk Humanistycznych i Dziennikarstwa.

Bawden, D. (2006). Users, user studies and human information behavior: A three-decade perspective on Tom Wilson's "On user studies and information needs". *Journal of Documentation, 62* (6), 671–679.

Castello, I., Morsing, M., & Schultz, F. (2013). Communicative dynamics and the polyphony of corporate social responsibility in the network society. *Journal of Business Ethics, 118*, 683–694.

Castells, M. (2000). Toward a sociology of the network society. *Contemporary Sociology, 29*(5), 693–699.

Castells, M. (2009). Foreword. In J. L. Qiu (Ed.), *Working-class network society* (p. ix). Cambridge, MA: MIT Press.

Christakis, N. A., & Fowler, J. H. (2011). *W sieci. Jak sieci społeczne kształtują nasze życie [Connected: The surprising power of our social networks and how they shape our lives]*. Sopot: Smak Słowa.

Cisek, S. (2017). Zachowania informacyjne – wybrane aspekty [Information behaviors – selected aspects]. In: *Biblioteki naukowe: oczekiwania naukowców a oferta bibliotek* [National libraries: Scientists expectations and libraries offer]. *Biuletyn EBIB [EBIB Bulletin], 3*(173), 1–11.

Ford, N. (2015). *Introduction to information behavior*. London: Facet.

Fuhse, J. A. (2009). The meaning structure of social networks. *Sociological Theory, 27*(1), 51–73.

Goban-Klas, T., & Sienkiewicz, P. (1999). *Społeczeństwo informacyjne: Szanse, zagrożenia, wyzwania [Information society: Opportunities, threats and challenges]*. Cracow: Wydawnictwo Fundacji Postępu Telekomunikacji.

Godbold, N. (2006). Beyond information seeking: Towards a general model of information behavior. *Information Research, 11*(4), paper 269. Accessed June 5, 2017, from http://InformationR.net/ir/11-4/paper269.html

Kamińska-Czubała, B. (2013). *Zachowania informacyjne w życiu codziennym. Informacyjny świat pokolenia Y [Information behaviors in everyday life. Informational world of the Y generation]*. Warsaw: Wydawnictwo SBP.

McKenzie, P. (2003). A model of information practices in accounts of everyday-life information seeking. *Journal of Documentation, 59*(1), 19–40.

Muraszkiewicz, M. (2005). Esej: nowy paradygmat, czyli od systemu do sieci [Essay: A new paradigm, from the system to the network]. In B. Sosińska-Kalata & M. Przastek-Samokowa (Eds.), *Od informacji naukowej do technologii społeczeństwa wiedzy [From scientific information to the technology of the knowledge society]* (pp. 83–86). Stowarzyszenie Bibliotekarzy Polskich: Warsaw.

Para, P. (2012). Procesy instytucjonalizacji społeczeństwa sieci [Processes of the institutionalization of the network society]. In N. Serocka (Ed.) *Via Comunnicandi – Pismo z antropologii komunikacji i epistemologii społecznej* [*Via Communicandi – A periodical about anthropology of communication and social epistemology*] (Vol. 1, pp. 193–208). Oficyna Wroclaw: Wydawnicza ATUT, red. B. Sierocka. [online]. Accessed June 5, 2017, from http://www.wnsid.dsw.edu.pl/fileadmin/user_upload/wns/via_comunicandi/1/12_Para.pdf

Rogala, A. (2015). Role i aktywności konsumentów w społeczeństwie sieciowym w ramach komunikacji marketingowej na rynku żywności [Roles and consumer activity in the context of marketing communications on the food market in the era of network society]. *Prace Naukowe Uniwersytetu Ekonomicznego (AE) we Wrocławiu [Scientific works of the University of Economics (AE) in Wroclaw], 414*, 61–73.

Rogala, A. (2017a). Komunikacja marketingowa w społeczeństwie sieci – ewolucja czy rewolucja? [Marketing communications in the network society era: Evolution or revolution?]. *Przedsiębiorczość i Zarządzanie [Entrepreneurship and Management], XVIII*(4, part II), 327–339.

Rogala, A., (2017b). Zachowania informacyjne współczesnych konsumentów – implikacje dla działań z zakresu komunikacji marketingowej [Information behaviors of contemporary consumers: Implications for marketing communication activities]. In: Marketing przyszłości. Trendy. Strategie. Instrumenty. Partnerstwo i komunikacja podmiotów w regionie [Marketing of the future. Trends. Strategies. Instruments. Partnership and communication of entities in the region]. *Marketing i Zarządzanie, 1*(47), 229–239.

Savolainen, R. (2016). Information seeking and searching strategies as plans and patterns of action. A conceptual analysis. *Journal of Documentation, 72*(6), 1154–1180.

Schultz-Jones, B. (2009). Examining information behavior through social networks. An interdisciplinary review. *Journal of Documentation, 65*(4), 592–631.

Śliwińska, J. (2017). Społeczeństwo sieci a nowe formy zaangażowania [Network society and new forms of engagement]. *Adeptus. Pismo humanistów* [*Adeptus. Periodic of humanists*]. Art. 1494, *10*, 1–12. https://doi.org/10.11649/a.1494

Spink, A., & Heinström, J. (2011). Conclusions and further research. In A. Spink & J. Heinström (Eds.), *New directions in information behavior*. Bingley: Emerald Group.

Stachowicz, J. (2011). Globalne sieci przepływu kapitału, wiedzy oraz wartości jako kluczowe wyzwanie w zarządzaniu przedsiębiorstwami [Global networks of capital, knowledge and value flow as a key challenge in business management]. *Zeszyty Naukowe Polskiego Towarzystwa Ekonomicznego [Research Bulletin of Polish Economic Society], 9*, 201–214.

Stalder, F. (2006). *Manuel Castells: The theory of the network society*. Cambridge: Polity Press.

van Dijk, J. (2012). *The network society* (3rd ed.). London: Sage.

Watts, D. J. (2004). *Six degrees: The science of a connected age*. New York: W.W. Norton.

Wilson, T. D. (2000). Human information behavior. *Informing Science, 3*(2), 49–55.

Wilson, T. (2008). The information user: Past, present and future. *Journal of Information Science, 34*(4), 457–464.

Part IV
Entreprenurship

Entrepreneurship for the Future: A Conceptual Look Toward Sustainability Entrepreneurship

M. Murat Yaşlıoğlu and Duygu Toplu Yaşlıoğlu

Abstract This theoretical paper defines the concept of sustainability entrepreneurship and how it differs from basic entrepreneurship approaches, eco-entrepreneurship, and social entrepreneurship. All the core elements or so-called pillars of sustainability entrepreneurship are defined and some cases for real sustainability entrepreneurships are illustrated. Sustainability concept is allegedly well accepted both by scholars and practitioners, but in reality, there are very few examples that fit the definition of sustainability entrepreneurship: it is a process to explore and implement future products, processes, and services for protecting the nature and balancing the social phenomena. The returns to be gained here contribute not only to the economy but also to the noneconomic individuals and the community as well. Study aims to describe, define, and detail the concept of Sustainability Entrepreneurship and outline the components with examples such as Career Moves, Waste Works, d.light, Qurrent, Tesla Motors, Bugday, and Çöp(m)adam from all over the world. On one hand, sustainability entrepreneurship addresses environment, social stability, and economic contribution which are the main focuses of sustainable development; and pursues profit on the other.

Keywords Sustainability entrepreneurship · Social entrepreneurship · Sustainable development · Eco-entrepreneurship

1 Introduction

Boosting entrepreneurship is extremely important in the development of a country. Successful entrepreneurial activities are highly beneficial for generating employment in the country, accelerating economic growth, in the emergence of new industries, and in the process of change and development in society. However, in line with the

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increased awareness and increased sensitivity in social, economic, and environmental concerns, the definition of classical entrepreneurship has now been reshaped for a "sustainable" world.

According to Schumpeter's perspective, however, entrepreneurship can only be achieved through innovation; although this perspective in 1934 is somewhat different from the perspective of today's innovation, what is emphasized here is bringing existing resources together in a different way rather than providing new products or services (Parnell and Lester 2007; Schumpeter 1961). In the literature, the concept of entrepreneurship is discussed both at the individual level and at the group and organizational level with case studies, within the context of organizations as entrepreneurs and intrapreneurship (Pearce et al. 1997; Lumpkin and Dess 1996). However, the legal and social pressures of more conscious consumers and producers as well as the pressures of the state's social institutions in line with the ever-increasing and evolving needs have necessitated redefining businesses. Hence, the entrepreneurs, as the entities and individuals who bring together the production factors and protect the environment (natural, economic, and social) and the production factors, take all necessary measures to protect them and increase awareness in this regard, instead of just bringing together the factors of production as in old definition (Cohen and Winn 2007). This necessity has begun to be taken much more seriously with the concepts of "sustainable development" or "sustainable community development" that come to the fore.

Sustainability entrepreneurship needs to be addressed in three intersecting dimensions in this regard (Hodgkin 2002): social entrepreneurship, sustainable development, eco-entrepreneurship. Sustainable entrepreneurship is only possible by taking both corporate social responsibility understanding and eco-entrepreneurship into account together on the basis of sustainable development. Therefore, before examining the concept of sustainability entrepreneurship, it is necessary to consider the premises of this concept, or in other words, the building blocks of the concept, from a chronological point of view.

2 Sustainable Development and Social Responsibility Concepts

The industrial development, which has taken place in the global level over the last two centuries, has led to ecological shortages. This change of the industry has led to severe pressure on our planet and on human life, in particular. A sustainable change is necessary about people's lifestyles, the way they do business, technological development and the consumption of resources; in this way environmental, economic, and social factors will be able to survive longer (Patzelt and Shepherd 2011; Pohlmann 1995).

Sustainable development refers to a qualitative development rather than the definition of growth. Sustainable development only creates an indirect economic

growth; its primary concern is to establish and protect long-term environmental, social, and cultural climate. Sustainable development addresses environmental concerns, respect for social equality and qualitative and quantitative economic recovery together and interdependently. Sustainable development is related to the provision of balance between the environment, economic equality, and their relation to society (Hawken 1993; Pohlmann 1995; Rees and Roseland 1998; Ayrton 1999).

From a business perspective, social responsibility means "activities of business in the direction of the health and well-being of all the stakeholders (individuals, organizations, environment, etc.) affected by its operation." Socially responsible businesses offer their socially appealing products with respect to social institutions (Singer 2001; Campbell 2007). Enterprises with social responsibility (Hammann et al. 2009; Hodgkin 2002):

- Assume responsibility toward the environment, social equality, and economic growth, which are the three fundamentals of sustainability
- Perform their performance evaluations on these three sustainability bases that they adopted as an ideology
- Continuously improve methods of doing business within the framework of sustainable behavior
- Improve the society and invest in the society through their operations and processes
- Attach importance to the concept of corporate citizenship and invests in this area
- Adopt innovation for a sustainability-oriented corporate culture
- Attach importance to social concerns and act with these concerns in mind
- Do not ignore the needs of future generations, while trying to increase the quality of life of the society
- Act in the direction of accountability and cooperate with all actors in the community.

Sustainable development as well as the accompanying sustainability and social responsibility concepts can only be achieved through sustainability-based entrepreneurship. In this regard, it is necessary to examine these two concepts which are related and often used interchangeably. The first of these include eco/social entrepreneurship and sustainability entrepreneurship, which can be addressed on a wider scale.

3 Eco-Entrepreneurship and Social Entrepreneurship

Even if the eco-entrepreneurship and entrepreneurship concepts have the same background, the two concepts have different perspectives from each other. Traditionally, entrepreneurs have to create new markets, innovate, bring out the change, and create value by bringing together different resources. As a result of this added value, additional social outcomes such as providing employment, creating income sources, growing the economy, and so on becomes possible. For eco/social

entrepreneurs, however, the opposite is true. The presence of eco-entrepreneurs can be said to be a consequence of behaviors and social institutions of the modern age that respect the environment (Schaper 2002; Isaak 2002; Dixon and Clifford 2007). The concept of entrepreneurship with an environmentalist perspective is discussed in the literature with the terms eco-entrepreneurship, environmental entrepreneurship, enviropreneurship, green entrepreneurship, green-green business (Randjelovic et al. 2003; de Bruin and Lewis 2005; Menon and Menon 1997; Berle 1993; Isaak 1997).

Isaak (2002: 83) defines eco-entrepreneurship as "Initiatives aimed at transforming a sector of the economy through green design, environment-friendly production processes and a culture dedicated to sustainability throughout the life cycle of the enterprise" (Isaak 2002). Eco-entrepreneurship is based on being "green," that is being environmentalist, this should be the underlying motivation from the first day and should aim for recycling in the sector. According to another definition, eco-entrepreneurs make investments with the principle of sustainability and sell environmentally friendly products and services in their for-profit businesses founded on environmental values (Walley and Taylor 2002).

The environment is the basic starting point of eco-entrepreneurship. Traditional entrepreneurs or traditional businesses have a concern to become "more environmentalist" and present their present products and systems as "green" due to the pressures, such as general customer trends, regulations, government pressures, international preferability, and corporate social responsibility trends. Their environmental concerns are only for marketing campaigns, and regardless of their activities toward the environment, their underlying motivation is not environmentalist (Isaak 1997). Eco-entrepreneurs, however, see environmentalism as a goal, rather than as an instrument, in making profits; they constantly create the pressure to be environmentalist in and out of the business and seek a potentially competitive advantage in "green." Eco-entrepreneurs are the people who can shape their organizational culture, introduce this culture to the outside world, and attract customers that have an environmental mindset, not the other way around (Kotchen 2009; Schaper 2002).

Chronologically, eco-entrepreneurship is the implementation and adoption of the environment first, profit later understanding with a visionary perspective on the business word of environmentally friendly ideas and innovations on the way to sustainability entrepreneurship. Sustainability is only possible with the environment-friendly approach founded on social equity and quality economic growth. Although social entrepreneurship and social entrepreneur are defined in different ways in the literature, the common point of the definitions is that the social entrepreneurship differs through adoption of social capital, social change, and social needs from the traditional entrepreneurship that focuses on performance criteria such as profit and return on investment (Mair and Noboa 2006; Peredo and McLean 2006; Dees 1998).

Social entrepreneurship is usually the result of approaching complex social problems in nonprofit sectors with an entrepreneurial perspective (Hodgkin 2002). Social entrepreneurs are individuals who have both adopted sustainable development understanding and become aware of their social responsibilities (Bornstein 2007). Social entrepreneurs bear the characteristics of entrepreneurs in the classical sense, but they dedicate these features for nonprofit social missions. Social

entrepreneurs, like classical entrepreneurs, take their strengths from personal skills and experiences, but also use society and collective consciousness in society as a resource. Instead of short-term profitability and financial success, they have the long-term development and growth concerns. Their mission is limited to potential businesses or ideas that make a positive contribution to the community; and profit is not a goal for them, but a tool to maintain and expand the business (Farid 2002; Thalhuber 1998).

It is clear that the concepts of eco-entrepreneurship and social entrepreneurship are interrelated concepts; the contributions of these concepts toward the sustainable development and social responsibility goals and the link between these two concepts have led to the concept of sustainability entrepreneurship (Larson 2000; Cohen et al. 2008). When the definitions of social entrepreneurship are examined, it is seen that two of the three components of sustainability focus on "social equality and, to a lesser extent, being economic"; eco-entrepreneurship, however, mostly focuses on "environmental issues" (Schaltegger and Wagner 2011).

4 Sustainability Entrepreneurship

Sustainability is considered by academicians and practitioners as a multidimensional concept. When the concepts of sustainability and entrepreneurship come together, the general belief is that the products or services to be provided would be beneficial to the nature, rights to life and the society, and that economic outcomes would not harm people's economic gains. The concept of sustainability entrepreneurship, founded on traditional entrepreneurship, is based on the premise that economic gains or, in other words, profits would be obtained from sustainable products (Kuhlman and Farrington 2010; Dean and McMullen 2007). Although there is no single agreed definition for the sustainability entrepreneurship, as the new concept of new economy we faced, generally the difference between the definitions is on the expectations of economic output. Some definitions of sustainability entrepreneurship in this regard are:

- It is consideration of solving environmental and social issues as a fundamental goal and an element of competitive advantage by a business operating in the private sector (Gerlach 2003).
- Sustainability entrepreneurship is contribution of a business to economic development by continuously acting ethically in order to raise well-being and quality of life of their families, whole society and even the next generations. Sustainability entrepreneurs are the people who put the sustainability objectives in the forefront in line with the profit orientation (Crals and Vereeck 2005).
- This for-profit entrepreneurship is founded to reach some environmentalist, social and economic goals by attaching importance to three dimensions of sustainability (Choi and Gray 2008).

- It is a market-oriented and person-based method of creating economic and social value with the help of key environmentalists and social innovations (Schaltegger and Wagner 2011).
- Sustainability entrepreneurship is a process to explore and implement future products, processes, and services for protecting the nature and balancing the social phenomena. The returns to be gained here contribute not only to the economy but also to the noneconomic individuals and the community as well (Schaltegger and Wagner 2011).

The main focus of sustainable entrepreneurship is to address environmental issues, social concerns, and economic equality while moving toward to create value for the business (Laszlo and Cooperrider 2007). For example, reducing energy use in operations, minimizing wastes, improving corporate reputation with sustainability aid, meeting legal requirements, reducing water use, meeting the social needs of employees and customers, attaching importance to research and development activities, reducing employee turnover, analyzing the risk factors well, and minimizing the number of work accidents are among these practices. Such practices will also reduce the costs of businesses and have a positive impact on their profitability while serving for sustainability (Bonini and Gorner 2012).

In summary, whether an entrepreneurial activity is sustainability oriented can only be assessed by looking at its sustainable development objectives (Bornstein 2007). On one hand, sustainability entrepreneurship addresses environment, social stability, and economic contribution which are the main focuses of sustainable development; pursues profit on the other. Sustainability entrepreneurship, eco-entrepreneurship, social entrepreneurship concepts are discussed comparatively in Table 1.

There is a transformation of market in sustainability entrepreneurship. The focus of this transformation, of course, is sustainable development. Hockerts and Wüstenhagen (2010) discuss this sustainability-oriented transformation of the market in four stages. These stages are (Hockerts and Wüstenhagen 2010):

- A highly motivated entrepreneur who has a good understanding of the dimensions of the concept of sustainability emerges with the aims of transforming the industry with sustainable innovations.
- The entrepreneur establishes his/her business and provides its growth. Follows the rising trends and creates some trend itself. The change in the industry continues gradually.
- Business-focused entrepreneurs add new innovations to their process and product innovations while pursuing this sustainability-oriented path. They find and invest in niche spots to achieve high market shares with a profitable growth.
- Major manufactures, under threat of these entrepreneurs, see the growth and profitability in the market and act upon to gain market share, and the transformation goes one step further into the maturity process.

There are many key factors for the emergence of this market transformation toward sustainability, sustainable growth, and sustainability entrepreneurship.

Table 1 Comparison of eco-entrepreneurship, social entrepreneurship, and sustainability entrepreneurship

	Eco-entrepreneurship	Social entrepreneurship	Sustainability entrepreneurship
Basic motivation	To solve environmental problems and create economic value	To create solutions for social problems as well as creating value for society	Making profit with a successful business model that contributes to social and environmental problems
Main objective	Making money by finding solutions to environmental problems	To achieve the social goals and create funds for this purpose	To provide sustainable development as a result of corporate activities
Role of economic objectives	Outputs (profit)	Resources	Outputs and resources
Role of nonmarket objectives	Setting the environmental objectives as the main focus	Achieving social goals as an outcome	Contributing to sustainable development through economic outputs
Challenges in organizational development	Problems in achieving environmentally oriented economic outputs	Challenges in obtaining economic outputs from a social point of view	Challenges in transferring the small contributions made in sustainable development to a large scale

Source: de Pereny (2015)

These factors form a chain and progress toward the sustainability goal gradually. It would be right to classify them as internal factors and external factors. Internal factors are assessed by the entrepreneurs themselves, which are (Soto-Acosta et al. 2016):

- Drawing attention the sustainability know-how and attention to this direction
- Recognizing opportunities arising from the resolution of sustainability-based market failures
- The motivation for the elimination of these failures
- Targeting the solutions for the environmental or social problems for the initial investment
- Making profits and guaranteeing the future of the business
- Beginning to address environmental and social objectives together
- Balancing profit, environment and people focus
- Solution of a sustainability-oriented market failure (transformation)

In addition to these internal factors, which arise in the form of sequential and interdependent steps, external factors considered effective and supportive in the whole process are as follows (Spear 2006):

- Creating awareness and support of social institutions
- Raising awareness and support of local authorities
- Increasing the support of the policies of the state institutions and the laws of the country for this type of entrepreneurs

- Increasing support for such entrepreneurs by international community organizations (United Nations, European Union, etc.) encouraging or forcing governments in this regard

External factors are as important as internal factors, and it is not possible to maintain a sustainability initiative for a long term without direct or indirect support (Schlange 2006). These internal and external factors form the basis for transformation in the direction of sustainability.

In the last decade, many sustainable businesses have emerged as a result of the abovementioned reasons that trigger internal factors and encourage entrepreneurs to invest in sustainability. In the next section, various examples from Turkey as well as international examples are discussed.

5 Examples of Sustainability Entrepreneurship

Strong emphasis on sustainability entrepreneurship has gained more importance all over the world as the needs of the natural, social, and economic environment become more evident. Looking through some domestic and international examples on the sustainability entrepreneurship will help to understand the concept and its effects. The examples discussed in this section in this regard: Trash(wo)men, Bugday Movement, TaTuTa, Ecological Market, hobby gardens of district municipalities in Turkey; some examples from abroad are Tesla Motors, Qurrent, d.light, Waste Works, and Career Moves.

5.1   Çöp(m)adam

This idea, which has been implemented as a local development project in Ayvalık by making experiments on recycling and women's employment in Turkey, aims to use the packaging wastes in a creative, different, esthetic, and unique way for sales purposes. The result: while Çöp(m)adam handbags set a trend in Turkey, they offer the buyers a good cause to spend money on, a cause that linked to the empowerment of the women on the one hand and to the recycling and protection of the environment on the other. The products produced from completely waste materials by housewives who had no regular income throughout their lives are unique. The Çöp(m)adam of Turkey (selected from housewives who had no regular income throughout their lives; three out of every four women in Turkey are unemployed) have seen an opportunity in tons of waste that fill the trash cans every day. Eco-stylish bags created by Çöp(m)adams are both a source of income for them and a new fashion icon for women. The profits earned are returned to the housewives after deducing the amounts required for business growth and advertising and marketing activities.

It provides regular salary for 100 women who are ready to work within the framework of the project and to provide contributions as a Çöp(m)adam. At the workshops, all the Çöp(m)adams work in a healthy and hygienic environment and get realistic and fair wage. The Çöp(m)adams are paid in cash per bag or product that they produced, even if the produced product is not sold. The business is supported by the business world in a variety of issues.

5.2 Bugday

The BUGDAY movement has been active since 1990 in harmony with the other forms of life by dreaming a society respectful to ecology as whole; and since August 12, 2002 it continues its institutionalized activities under the umbrella of the Buğday Association for Ecological Living. The goal of the Bugday is to create consciousness and awareness of ecological life in each individual and society as a whole; and to support life in harmony with nature as well as offering solutions to the problems that arise, at a pace and form difficult to cure, as a result of degradation in the ecological balance.

There are two separate initiatives that Buğday Ecological Life Support Association has established for profit. One is Ecological Market, the other is TaTuTa. The Ecological Market was established to promote production and consumption of ecological products in Turkey through a healthy, fair, sustainable, and reliable shopping model. These 100% Ecological Markets were designed for the purpose of transforming the open-air marketplaces, which are social and cultural meeting point of the society, with a new understanding.

The main purpose of the TaTuTa project (abbreviation for Agriculture, Tourism, Barter [Tarım, Turizm, Takas in Turkish]), which is the second initiative of Buğday, is to promote and sustain the ecological agriculture by providing financial support, voluntary labor, and/or information support to the ecological farmers in Turkey. In the project, knowledgeable individuals share their knowledge, experience, and/or workforce in the farms and businesses in the technical, marketing, social, and environmental dimensions of ecological production; and their food, drink, and housing needs are met by the farm. TaTuTa membership fees are paid to GençTur, which is a nice example of sustainability entrepreneurship that organizes youth camps, cheap holidays, interrail organizations, youth festivals, cultural tours, discount opportunities, and language school counseling, and are used to support services of this business.

Another example is the hobby gardens established by the district municipalities in order to make profit through entrepreneurship and use of idle lands. In these hobby gardens, citizens can lease land for a certain amount of rent and raise their own natural agricultural products annually. In this way, it is possible both to move away from the urban life and to contribute to the family budget by growing own products. In addition, since these lands are rented with very low prices, they also contribute

economically to the families. Thanks to these initiatives, the idle lands are greened and brought to nature as well as providing a socialization opportunity to individuals.

There are many examples in Turkey and in the world regarding the protection of the natural environment and the use of renewable, sustainable energy resources. These businesses generate energy through sustainable energy sources and make profits by selling it to energy grid networks of the country. In addition, some of these enterprises generate revenue by implementing these systems in housings and businesses and provide consultancy in this regard, contributing the spread of renewable energy. It is expected that the share of renewable energy sources in total energy production will be 25% by 2020 and 60% by 2040 (McMichael et al. 2000). These figures give clues on the extent of significance that sustainability entrepreneurship will have. There are many international examples of sustainability entrepreneurship, one of which is the rapid-growing and world-renowned Tesla Motors.

5.3   Tesla Motors

Tesla Motors was founded in 2003 by a group of engineers working in the Silicon Valley to prove that electric cars can be far superior to gasoline powered vehicles thanks to torque, power, and zero carbon dioxide emissions. Each new-generation vehicle is aimed to be better and cheaper than before, to contribute to the mission of the business articulated as "accelerating the transition of the world to sustainable transport." The company, named after Nikola Tesla, the creator of direct-current induction motor, has produced its first car in 2008; a car that that speeds from 0 to 100 km/h in 2.7 s, technically far superior to many gasoline-powered vehicles. Thanks to this new technology and new standard revealed by Tesla, one of the best examples of sustainability entrepreneurship, all automakers are forced to produce electric vehicles. Created by Tesla, this new standard has been proved to be a successful pioneer of sustainable development, with major car manufacturers like Mercedes, BMW, Toyota, Renault bringing their electric cars to the market. As mentioned before, the fourth stage asserted by Hockerts and Wüstenhagen on sustainable market transformation, that is "Major manufactures, under threat of these entrepreneurs, see the growth and profitability in the market and act upon to gain market share, and the transformation goes one step further into the maturity process" has been realized.

5.4   Qurrent

Established in the Netherlands to reduce the environmental impact of fossil fuels and to make a more sustainable world, Qurrent rejects fossil fuels as opposed to other energy companies and delivers electricity generated through renewable energy sources to the end consumers through direct contracts. With a contract over the

Internet, it is possible to completely switch to the green electricity at your home or workplace within 12 hours.

5.5 d.light

Ned Tozun, who aimed at providing social, environmental, and economic equity after considering the data from the United Nations, stating that three billion people in the world do not have access to electricity, and that more than two million people a year are using fossil fuels in their homes for cooking and illumination purposes, founded d.light in 2007. The company, which offers solar-powered products made in China at low cost for $8–12, has directed its marketing focus to underdeveloped countries and focused on the world's population that is trying to make a living with $1–2 daily income. In addition, for example, in the major parts of Africa, in the Middle East and Central Asia, and in many parts of the Far East, 70–80% of the regions do not have electricity (International Energy Agency 2010). Even in countries like Turkey, South American countries, China, etc., this ratio reaches 30%. Considering both the financial situation and the availability of electricity, this problem is striking. The sales personnel of d.light, who are reaching these places through marketing network, visit villages, towns and settlements by making plans and programs, and sell their products accordingly. d.light, which operates in 40 countries approximately in total, sells between 100,000 and 150,000 products per month (Kennedy et al. 2012).

5.6 Waste Works

Established in Austria, this company is able to produce fuel from plastic bags using a very rare technology it developed. This technology aims to generate income both for the local people and for the business, especially in developing and underdeveloped countries by creating environmental awareness and generating new sources of income.

5.7 Career Moves

It aims to provide job opportunities to citizens with disabilities with equal opportunities and fair conditions and wages by creating an online platform within Europe, especially within the EU. In the first year of its establishment, 5000 job opportunities were offered from 300 different companies. Business income comes from the business memberships.

When these examples are examined from all over the world, it is seen that all of them have been established to solve social and environmental problems and economic inequalities within the framework of long-term sustainable development as well as making profit at the same time. Compared to traditional initiatives, however, profit is not the principal objective, but a tool for their sustainability purposes. Through the sustainability entrepreneurship, it is possible to achieve a total transformation toward the better and sustainable development.

The adoption of the concept of sustainability undoubtedly broadens the current entrepreneurship mentality. Sustainability perspective has a drastic impact on traditional entrepreneurial activities that are dedicated to make profits in an uncertain environment. From the perspective of sustainability, entrepreneurship means not only pursuing opportunities to make profit but also revealing and pursuing new possibilities for preserving and improving the natural, social, and economic environment. Although the concepts of social entrepreneurship, eco-entrepreneurship, and sustainable entrepreneurship do not refer to the same thing as "sustainability entrepreneurship," they are raising awareness in the direction of ensuring prosperity of future generations, which is the ultimate goal sustainability. Sustainability entrepreneurship is a combination of three elements in the direction of sustainable development: "natural environment, social environment and economic prosperity". The number of such initiatives, which have gained importance in recent years, will further increase over time, because humankind has to fix the world broken by the very same humankind again.

6   Conclusion

Since sustainability has become a popular topic in the literature and practice, many firms claim to be sustainable enterprises. However, it seems that the concept of sustainability is not well understood in reality. Many companies are only applicants of sustainable practices but not sustainable enterprises. There are only a few companies fulfill all necessities of a sustainable company. Sustainability entrepreneurship does lack one main thing for many, profits. Unfortunately, capital system corrupts the mindset and even a pure approach for sustainability later becomes a profit-oriented entity. Three pillars—social, economic, and environmental care, are the keys for a sustainable future, but phenomenon should be supported by the system. Without a concrete support from policy makers, the sustainability entrepreneurship will remain "big words practiced by a small minority."

References

Ayrton, K. E. (1999). *Building bridges: Sustainable development and corporate community investment*. Alberta: Calgary University Press.

Berle, G. (1993). *The green entrepreneur: Business opportunities that can save the earth make you money*. Blue Ridge Summit. New York: Liberty Hall Press.

Bonini, S., & Gorner, S. (2012). *The business of sustainability*. Silicon Valley, CA: McKinsey and Company Press.

Bornstein, D. (2007). *How to change the world: Social entrepreneurs and the power of new ideas*. Oxford: Oxford University Press.

Campbell, J. L. (2007). Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. *The Academy of Management Review, 32*(3), 946–967.

Choi, D. Y., & Gray, E. R. (2008). The venture development processes of "sustainable" entrepreneurs. *Management Research News, 31*(8), 558–569.

Cohen, B., & Winn, M. I. (2007). Market imperfections, opportunity and sustainable entrepreneurship. *Journal of Business Venturing, 22*(1), 29–49.

Cohen, B., Smith, B., & Mitchell, R. (2008). Toward a sustainable conceptualization of dependent variables in entrepreneurship research. *Business Strategy and the Environment, 17*(2), 107–119.

Crals, E., & Vereeck, L. (2005). The affordability of sustainable entrepreneurship certification for SMEs. *The International Journal of Sustainable Development & World Ecology, 12*(2), 173–183.

de Bruin, A., & Lewis, K. (2005). Green entrepreneurship in New Zealand: A micro-enterprise focus. In M. Schaper (Ed.), *Making ecopreneurs: Developing sustainable entrepreneurship* (pp. 61–71). Oxford: Taylor& Francis.

de Pereny, S. G. L. (2015). The Peruvian cacao value chain's success: Fostering sustainable entrepreneurship, innovation, and social inclusion. In P. Sloan, W. Legrand, & C. Hindley (Eds.), *The Routledge handbook of sustainable food and gastronomy*. Oxford: Taylor& Francis. Chapter 16.

Dean, T. J., & McMullen, J. S. (2007). Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action. *Journal of Business Venturing, 22*(1), 50–76.

Dees, J. G. (1998). *The meaning of social entrepreneurship* [online]. Accessed February 2020, from http://web.stanford.edu/group/e145/cgi-bin/spring/upload/handouts/dees_SE.pdf

Dixon, S. E., & Clifford, A. (2007). Ecopreneurship–a new approach to managing the triple bottom line. *Journal of Organizational Change Management, 20*(3), 326–345.

Farid, M. (2002, July). Social entrepreneurs in nonprofit organizations: Theoretical and empirical examination. In *Allied Academies International Conference Academy of Entrepreneurship Proceedings*. Las Vegas, Navada.

Gerlach, A. (2003, June). Sustainable entrepreneurship and innovation. In *Corporate Social Responsibility and Environmental Management Conference Proceedings*. Leeds, UK.

Hammann, E. M., Habisch, A., & Pechlaner, H. (2009). Values that create value: Socially responsible business practices in SMEs–empirical evidence from German companies. *Business Ethics: A European Review, 18*(1), 37–51.

Hawken, P. (1993). *The ecology of commerce: A declaration of sustainability* (pp. 21–38). New York: Harper.

Hockerts, K., & Wüstenhagen, R. (2010). Greening Goliaths versus emerging Davids—theorizing about the role of incumbents and new entrants in sustainable entrepreneurship. *Journal of Business Venturing, 25*(5), 481–492.

Hodgkin, S. V. (2002). *Business social entrepreneurs: Working towards sustainable communities through socially responsible business practices*. Doctoral dissertation, University of Calgary.

International Energy Agency. (2010). *World energy outlook*. Accessed August 18, 2017, from http://www.worldenergyoutlook.org/weo2010/

Isaak, R. (1997). Globalisation and green entrepreneurship. *Greener Management International, 18*, 80–90.

Isaak, R. (2002). The making of the ecopreneur. *Greener Management International, 2002*(38), 81–91.

Kennedy, M., Jorach, G., & Sorensen, J. (2012). *D.light selling solar to the poor*. Boston, MA: Harvard Business School Press.

Kotchen, M. J. (2009). Some microeconomics of eco-entrepreneurship. In D. Gary (Ed.), *Frontiers in eco-entreprenurship research (Advances in the study of entrepreneurship, innovation & economic growth)* (pp. 71–76). Bingley: Emerald Group Publishing.

Kuhlman, T., & Farrington, J. (2010). What is sustainability? *Sustainability, 2*(11), 3436–3448.

Larson, A. L. (2000). Sustainable innovation through an entrepreneurship lens. *Business Strategy and the Environment, 9*(5), 301–322.

Laszlo, C., & Cooperrider, D. L. (2007). Design for sustainable value: A whole system approach. In M. Avital, R. J. Boland, & D. L. Cooperrider (Eds.), *Designing information and organizations with a positive lens (Advances in appreciate inquiry)*. Bingley: Emerald Group Publishing. Chapter 2.

Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *The Academy of Management Review, 21*(1), 135–172.

Mair, J., & Noboa, E. (2006). Social entrepreneurship: How intentions to create a social venture are formed. In M. J. Robinson & K. Hockerts (Eds.), *Social entrepreneurship* (pp. 121–134). London: Palgrave Macmillan.

McMichael, A. J., Smith, K. R., & Corvalan, C. F. (2000). The sustainability transition: A new challenge. *Bulletin of the World Health Organization, 78*(9), 1067–1067.

Menon, A., & Menon, A. (1997). Enviropreneurial marketing strategy: The emergence of corporate environmentalism as market strategy. *Journal of Marketing, 61*, 51–67.

Parnell, J. A., & Lester, D. L. (2007). Reevaluating the entrepreneurship-management conundrum: Challenges and solutions. *Journal of Applied Management and Entrepreneurship, 12*(4), 74–88.

Patzelt, H., & Shepherd, D. A. (2011). Recognizing opportunities for sustainable development. *Entrepreneurship Theory and Practice, 35*(4), 631–652.

Pearce, J. A., Kramer, T. R., & Robbins, D. K. (1997). Effects of managers' entrepreneurial behavior on subordinates. *Journal of Business Venturing, 12*(2), 147–160.

Peredo, A. M., & McLean, M. (2006). Social entrepreneurship: A critical review of the concept. *Journal of World Business, 41*(1), 56–65.

Pohlmann, M. K. (1995). *Principles and a planning process for citizen participation in sustainable community development*. Ph. D. thesis, University of Calgary.

Randjelovic, J., O'Rourke, A. R., & Orsato, R. J. (2003). The emergence of green venture capital. *Business Strategy and the Environment, 12*(4), 240–253.

Rees, W. E., & Roseland, M. (1998). Sustainable communities: Planning for the 21st century. *Sustainable Development and the Future of Cities, 31*, 15–26.

Schaltegger, S., & Wagner, M. (2011). Sustainable entrepreneurship and sustainability innovation: Categories and interactions. *Business Strategy and the Environment, 20*(4), 222–237.

Schaper, M. (2002). The essence of ecopreneurship. *Greener Management International, 38*, 26–30.

Schlange, L. E. (2006). What drives sustainable entrepreneurs. *Applied Business and Entrepreneurship Association International Conference*, Kona, 16–20 November 2006.

Schumpeter, J. A. (1961). *The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle*. Cambridge: Harvard University Press.

Singer, T. (2001). Can business still save the world? *Inc Magazine, 23*(5), 58–69.

Soto-Acosta, P., Cismaru, D. M., Vatamanescu, E. M., & Ciochina, R. S. (2016). Sustainable entrepreneurship in SMEs: A business performance perspective. *Sustainability, 8*(4), 342–350.

Spear, R. (2006). Social entrepreneurship: A different model? *International Journal of Social Economics, 33*(5/6), 399–410.

Thalhuber, J. (1998). *The definition of social entrepreneur*. National Centre for Social Entrepreneurs. Accessed August 15, 2017, from http://www.socialentrepreneurs.org/entredef.html

Walley, E. E., & Taylor, D. W. (2002). Opportunists, champions, mavericks? A typology of green entreprenurs. *Greener Management International, 38*, 31–35.

Determinants of Risk Relation in Technological Entrepreneurship

Iwona Staniec

Abstract Identification of factors that influence relation risk at the companies implementing technological entrepreneurship is a problem both in theoretical and practical terms. Based on a review of the literature, the chapter has built a conceptual model of factors determining the risk of relation with the supplier of new technologies. The conceptual model was then verified empirically based on randomly selected small- and medium-sized companies involved in technological entrepreneurship. The empirical studies carried out using structural models confirm that the perception of internal threats, the financial result in the last 3 years, and the perception of competitiveness have a significant and direct impact on relationship risks. In addition, research shows that the perception of competitiveness has an indirect impact on relationship risk through the perception of internal threats. However, it was not possible to confirm the impact of the perception of cooperation opportunities on the perception of relationship risk from the literature.

Keywords Conceptual model · New technologies · Relation with a supplier · Risk of relation · SEM · Technological entrepreneurship

1 Introduction

The main objective of the presented research is to operationalize the construct of relation risk with the suppliers of new technologies and to show the dependencies between relation risk and other constructs describing the operation of technological entrepreneurship. The research will cover the impact of different observed and latent variables on the relationship with a supplier of new technologies. Research objectives have been identified in the following areas:

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- Theoretical—definition and characterization of the dimensions of relation risk with suppliers of new technology
- Methodological—operationalization of the variables determining the dimensions of relation risk with suppliers of new technology
- Empirical—conducting research with the use of the proposed operationalization and the determination of the impact and the mutual dependencies between the constructs

This chapter will be divided into five main sections. Section 1 introduces the theme of the work and contains the defined research questions. Section 2 is the overview of literature during which the author also analyses the major viewpoints on the factors which determine relation risk. Section 3 explains the conceptual methodology and the principle of creating a research model. Section 4 presents the results of the analysis, the empirical verification of the model, and the answers to the research questions. Section 5, i.e., the conclusion, recaps the information presented in the chapter, outlines opportunities for further research and also presents the limitations of the chapter.

2 Literature Review

The problem of unobservable variables in management was first presented by Godfrey and Hill (1995). On the grounds of critical realism, they pointed to the need to develop testing methods for theories that are based on unobservable variables. The main premise for finding the right method is to identify the ontological assumptions of critical realism through structures, mechanisms, events, and experiences. The relevance of these theories is found in the statistical methods based on implicit or causal modeling. Bagozzi (1981, p. 380) shows that causal modeling allows for the integration of the theoretical modeling phase with the empirical and testing stages of the hypotheses proposed by the researcher. According to Jöreskog and Sorbom (1979), structural equation modeling (SEM) is adequate for such phenomena. By adopting risk management, savings potentials can be realized in technological entrepreneurship in the relation with a supplier of new technologies. Schieg (2006) states that effective risk management must permeate all of the areas, functions, and processes of the relation. Effective risk management requires commitment as well as the risk-conscious behavior of each individual. The motivation as well as the interplay of the parties involved in the relation determines in the end the quality of the work and thus the success of the collaboration.

Anderson and Narus (1984) present a survey examining satisfaction with a manufacturer–distributor relationship in the electronics sector. Based on 153 observations, the following latent variables were identified: control, conflict, satisfaction, communication, comparison of results to alternative sources, and comparison of results to expected results. The research has confirmed the positive impact of the comparison of results to expected results in terms of satisfaction, comparison of

results to alternative sources in terms of control, and a negative impact of control on satisfaction. Morgan and Hunt (1994) studied a manufacturer–dealer relationship in the automobile tire sector. Based on a sample of 204 tire retailers, they identified the following latent variables: trust, engagement, communication, opportunism, common values, strength, conflict, cooperation, tendency to break, uncertainty, and potential conflict. Lush and Brown (1996) investigated cross-sector supplier–distributor relations. In their empirical research, based on a sample of 454 respondents, the impact of the following latent variables was defined as significant: structure of dependence, nature of the relation, contract, relational behavior, and results from the relationship. A study of the manufacturer–supplier relationship was carried out in Poland by Swiatowiec (2003). Based on 129 observations, she identified the impact of the following latent variables on relations: long-term orientation, dependencies, trust, ambient variability, specific investments, reputation, satisfaction, and ambient diversity. Carson et al. (2008) conducted a cross-sectoral survey of business relations among 125 respondents and identified the following as latent variables: ambient variability, ambient ambiguity, opportunism, specific assets, reputation, and trust. Mitrega (2010), in his study of the network capacity of enterprises, on the basis of 478 respondents, distinguished the following latent variables: network capacity, market results, and quality of customer relationships. Rašković and MöRec (2013) presented a study of relations with suppliers in international companies. Based on a sample of 130 respondents, the following were defined as latent variables: competitiveness, relationship-based information, network side effects, physical assets-based transactions, people-based transactions, international trust, interpersonal trust, joint planning, joint problem solving, and relationship flexibility.

Research on risk relation can also be found in the literature. A lot of information about risk determinants can be found in the work of the *Basel Committee (1999)*. The Basel Committee defines operational risk as the "*risk of loss resulting from inadequate or failed internal processes, people and systems or from external events.*" This definition includes human error, fraud and malice, failures of information systems, problems related to personnel management, commercial disputes, accidents, fires, floods, etc. Proactive management of operational risk necessarily leads to improved collaboration conditions: such as streamlining of processes which results in increased productivity, and improved quality leading to a better brand image. The general environment favors greater awareness of collaboration risk, which awareness then becomes an intrinsic component of firm activities.

Światowiec-Szczepańska (2012, pp. 243–277) conducted research on strategic partnership risk. An empirical study of 215 entities shows that the following latent variables are influential in strategic partnership: relational standards, relational risk, complexity of the contract, partner competencies, good will, and business risk. Urbanowska-Sojkin (2013, pp. 360–409) conducted research on the risk of strategic choices. Based on 270 companies she identified the following latent risks of customers pertaining to value: risk of ensuring technological quality, risk of perceived quality, risk of ensuring availability, latent variables pertaining to resources, risk of legal constraints, risk of equity exposure, risk of fixed assets structure, and latent variables pertaining to decision-making process risk such as knowledge risk, process

risk, self-reliance risk, flexibility risk, location risk, internationalization risk, communication risk, risk of nondevelopment of partner relationships, and risk of temporary mismatch. Thus, the relation theory that develops on the basis of management sciences begins to take risks into account. This is influenced mainly by the following factors: the supply–demand model of managerial fashion, new management paradigms, and the fast-changing environment, or the emergence of entrepreneurial rent, treated as a casual and occasional value conditioned by an entrepreneur's behavior. On this basis, the twenty-first century management approaches should be increasingly based on predicting the future on the basis of both a well-diagnosed past and present (Rezazadeh and Nobari 2017), while taking into account existing resources and diagnosed opportunities and threats (Mühlböck et al. 2017). When considering risk according to the Basil Accord, one should take into account in one's relations the risk of loss resulting from insufficient or poor internal processes, people, and systems as well as external events affecting companies. Based on the literature overview, it is clear that—in the context of the risk affecting the relationship construct with suppliers of new technologies—the following latent variables exert impact: opportunity, threats, added value, and competitiveness. As part of the operationalization of these variables, benchmarking was used and the most frequently used formulations in the research were selected. They are presented in detail in the Appendix.

3 Methodology and Model

Due to the multifaceted and multidimensional nature of the problem in question, it was decided to use various theoretical approaches and diverse perspectives to study the problem, and also to make use of different data sources. As a result of the selection of theory-building elements, a decision was made that the following sequence will be adopted: operationalization of the construct to observable variables form—research model—research hypotheses—testing of hypotheses—data analysis.

The following research questions were posed in the paper:

Q1. What factors determine relation risk with suppliers of new technology?
Q2. Does perception of competitiveness adversely affect relation risk with suppliers of new technology?
Q3. Does perception of opportunities in the company's internal resources have a positive impact on relation risk with suppliers of new technology?
Q4. Does perception of threats in the company's internal resources have a positive impact on relation risk with suppliers of new technology?
Q5. Does a company's result in the previous years have a positive impact on relation risk with suppliers of new technology?
Q6. Does perception of competitiveness have a negative impact on the perception of threats in the company's internal resources?
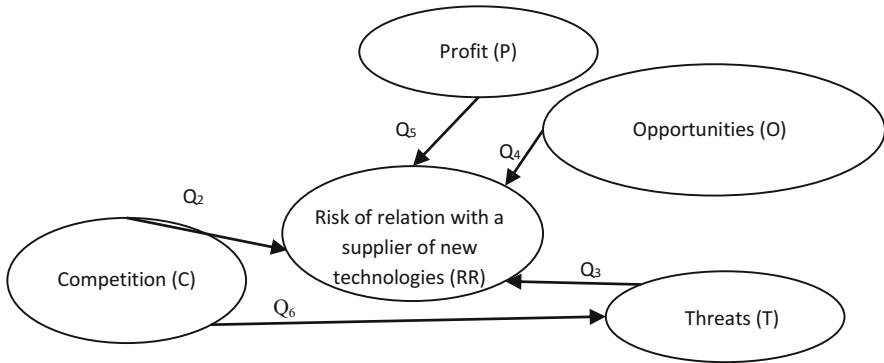
Fig. 1 Theoretical model of relation risk with a supplier of new technologies. Source: Author's proprietary study

The limitations of the proposed research procedure stem from the adopted research technique as well as from the data and research tools applied. They are primarily related to:

- The subjectivity that involves assigning specific statements to each of the variables under study in the process the operationalization of the tested construct
- The use of the triangulation of methods, researchers, and data (Denzin 2006, pp. 120–123) to confirm the results
- The use of quantitative and qualitative research to refine the research material and to indicate paradoxes and contradictions
- Respondents' subjectivism, i.e., assessment of statements making up the risk of relation with the suppliers of new technologies
- The fact that relation risk is a long-term process, while the collected information provides insights into a situation at a given moment

Individual constructs of relation risk and the observable variables used to identify them were created based on data in the literature and the merging of the results provided by different researchers as well as through the development of the model presented in the paper by Anderson et al. (2006). The proposed theoretical model designed to identify latent variables that determine the relationship risk with suppliers of new technologies is presented in Fig. 1.

In the research in question, models of structural equations will have verification and descriptive functions (Hair et al. 1995, p. 123). The models of structural equations are estimated using the method of biggest reliability, assuming a multivariate normal distribution, and generalized least squares method, requiring large numbers of $n > 2500$ (Westland 2010; Byrne 2013), with the method asymptotically insensitive to decomposition [min. 500 observations (Curran et al. 1996; Hu et al. 1992; Hair et al. 1995; Byrne 2013)]. The selection thereof depends on the sample size and its distribution. The literature overview confirms—after Westland (2010)— that the requirements for the sample size and its distribution when using structural

models and estimation methods are most often not met. The bootstrap procedure is often used to improve the reliability of the obtained results. In structural modeling, one can distinguish two types of variables: exogenous, whose variability is determined by causes beyond the model, i.e., they are not explained by other variables in the model, and endogenous, whose variability is explained by the influence of other variables in the model—both exogenous and endogenous. In addition to them, the so-called residual variables are introduced into the model, i.e., variables reflecting the impact of the variables not covered by the analysis. With these, we assume that with the introduced variables we will never fully explain a given variable's total variance. The assumptions in the structural modeling include:

- Relations between variables are causal and linear or approximated to linear (Loehlin 1987, pp. 293–295).
- Relations between the variables introduced into the model are additive, i.e., the variables are not correlated (Byrne 2013).
- Residual variables are not correlated with each other or with the variables to which they refer.
- Correlation of exogenous variables is not caused by a common cause and is not covered by the analysis.
- Variables are measured at least on an interval scale.

Structural equation modeling is a type of data analysis that allows one to test complex theoretical models that take into account different cause and effect relations among variables (Hair et al. 1995). Structural models have equal numbers of proponents and opponents. The difference in opinions is not mathematical, but methodological and philosophical (Meehl and Waller 2002). It is emphasized that structural modeling:

- Enables one to include observable, manifest variables, measured during the test, and latent variables that are not observable
- Enables one to verify hypotheses concerning a specific structure of relations between variables (Gefen et al. 2000)
- Enables one to test indirect and direct effects, and introduce latent variables as well as determine the error associated with their measurement (Fornell and Larcker 1981; Byrne 2013)
- Is flexible in describing the relations between variables, especially qualitative variables (Sagan 2003), and the use of different measurement scales of variables
- Determines the causal effects of the dependency of unobservable variables based on unexplained variance (Loehlin 1987, p. 77; Byrne 2013)
- Is a method of testing the theory proposed by a researcher, since the structure of causal dependencies subject to verification is formed solely as a consequence of the theory

Limitations of structural modeling comprise primarily:

- Linearity (sometimes dependencies are nonlinear) and a lack of distinction between covariance and causality (Byrne 2013)

Table 1 Opinions on causality in structural equation modeling that can be found in the literature

Author	Represented view
Loehlin (1987)	They reflect the causes of different types
Hoyle and Smith (1994)	The proposed cause-and-effect sequences may remain non-falsified, which does not imply their confirmation
Mueller (1997), MacCallum et al. (1993)	Change of direction of dependencies between constructs in many cases does not change the fitting of the model and estimation of parameters
Pearl (2000)	The technique of testing casual relations is possible using empirical and qualitative data
Kline (2005)	Enables one to investigate at the same time the impact of many sources on a dependent variable

Source: Author's proprietary study

- Failure to meet the condition of the cause temporally preceding the effect (Mueller 1997; MacCallum et al. 1993)

The literature offers plenty of opinions on causality in structural equation modeling; they are presented in Table 1.

In structural equation modeling, casual relations between variables are expressed by what is known as the path coefficient:

- Standardized (variance equal to 1) indicates how much the effect will change if the cause changes by one unit.
- Non-standardized—regression coefficient (Gefen et al. 2000)—indicates by how many standard deviations the value of the effect will change if the value of the cause increases by one standard deviation.

Thus, the coefficient values describe the direction (negative/positive) and the impact force of the cause on the effect. The impact force can be compared between effects using standardized coefficients. The values of non-standardized coefficients depend on the units in which variables are measured. The model parameters are estimated based on the correlation matrix by using the calculation procedure devised by Cudeck (1989). An important aspect of structural modeling is its verification. To this end, an analysis is performed of the reasonableness of the received parameters and of the goodness of fit of the model. Aaker and Bogozzi (1979) claim that one should attempt to maximize degrees of freedom while at the same time adequately fit the model to the data. According to Sagan (2003), model fitting to empirical data is assessed on the basis of the verification of the H0 hypothesis: the standardized residues of the empirical and theoretical matrix are zero, i.e., the constraints imposed by the researcher on the theoretical model are relevant. To verify such hypothesis, statistic χ^2 is used, which should be statistically insignificant ($p > 0.05$—rarely fulfilled in empirical studies) (Hair et al. 1995). According to other researchers (Hu et al. 1992; Kline 2005; Fornell and Larcker 1981), for this purpose one can use the following:

- The Root Mean Square Error of Approximation (RMSEA)—its values lower than 0.05 show good fit; the lower the RMSEA calculated based on the model, the better the fitting of the model; values (0.06; 0.08) are of a satisfactory fit, (0.08; 0.10)—mediocre fit. RMSEA > 0.1 indicates a bad model fit (Browne and Cudeck 1992).
- Quotient χ^2 by the number of degrees of freedom—values lower than 1 indicate a too good data fit—false model; limit values (1; 5)—acceptable models (some say that the upper limit is 2); more than 5—unacceptable models (Jöreskog and Sorbom 1979).
- Goodness of Fit Index GFI by Jöreskog—values higher than 0.95 are recommended.
- Adjusted Goodness-of-Fit Index (AGFI) by Jöreskog—values higher than 0.9 are recommended.

The Akaike criterion is used as a comparable coefficient of many models—its value should be as low as possible and close to zero (Sagan 2003, p. 92; Sroka 2009, p. 198). The whole research procedure is composed of two parts (there is an on-going methodological dispute about it in the literature) (Anderson and Gerbing 1992; Schumacker and Lomax 1996; Sagan 2003, p. 92). First, there is the measurement model that determines the way latent constructs are identifiable and explained by observable variables. The model estimates their measurement properties by determining the reliability of the data; to this end, the values of the Cronbach alpha coefficient were determined as well as factor loads for each of the observable variables. A confirmatory factor analysis is performed to estimate measurement properties of the model. Secondly, there is the structural model designed to determine the causal relation between latent factors and the magnitude of unexplained variance.

4 The Findings

To validate the theoretical model proposed herein, the authors used the data collected during the research performed by the staff of the Faculty of Management at the Lodz University of Technology in 2017. The empirical research was performed on a randomly selected sample of 375 items. The selection was based on the Polish Classification of Business Activity. The empirical data was used to verify whether all observable variables meet the condition under which all standardized factor loads exceed 0.7 and measurement reliability for each latent variable is at least 0.8. Moreover, for each variable Jöreskog's rho was calculated as Composite Reliability (CR) and Average Variance Extracted (AVE). Detailed information can be found in the Appendix. Points that met the applicable theoretical requirements are in bold. The presented statistics show that latent variables—perception of opportunities within the company and relation risk—do not reach the threshold values of the coefficients. In the case of perception of opportunities, observable variables O2-O4

do not exhibit load factors above 0.7. Cronbach's alpha for the latent construct is 0.639, i.e., less than the required 0.8; it explains the variability of variance only in 0.3305, and not in the required 0.5. However, the calculated KMO coefficient and Bartlett's test for sphericity confirm that they explain one context. Therefore, and due to theoretical conditions, a decision was made to leave them unchanged. The weakness of the considerations is the failure to meet the threshold conditions by the construct of relation risk and the observable variables that represent it. In future research, it may be worth considering what observable variables should be added by conducting more in-depth desk research. Cronbach's alpha relation risk for the latent construct is 0.283, which is very low; all standardized factor loads for observable variables are below the required 0.7. They explain the variability of variance only in 0.1404, and not in the required 0.5. However, the calculated KMO coefficient and Bartlett's test for sphericity confirm that the context is significant and that the variables are statistically interlinked. Due to theoretical conditions, it was decided that they would remain in the model being created. Moreover, in the latent construct of financial results from the last 3 years, the observable variant, i.e., the 2015 result, does not reach the required threshold for factor load; however, due to the small deviance (0.647) it was left in the construct in question.

Based on the presented results, it was decided that all observable variables, even if they did not meet the threshold requirements of the model, would remain because of their significance in theoretical conditions. It is worth noting that the Kaiser-Mayer-Olkin coefficient (KMO) presented in the Appendix is in each case greater than 0.5, demonstrating the feasibility of explaining the variability of the construct by referring to the selected observable variables. Moreover, in Bartlett's test for sphericity we rejected the null hypothesis that assumes that the correlation matrix is a unit matrix. And thus, in each case, the factorial model is appropriate for the observable variables under analysis because the variables are significantly statistically interlinked.

In the measurement model (Table 2), significant correlation dependencies were identified ($p < 0.05$) between:

Table 2 List of coefficients for the measurement model and the structural model

Measurements	MI	MII	Measurements	MI	MII
λ^2	301.551	308.441	λ^2/ss	2.12	2.09
Number of freedom degrees	142	147	CFI	0.957	0.959
p	0.0000	0.0000	AGFI	0.911	0.915
RMSEA	0.072	0.071	Akaike (AIC)	597.55	594.44
RMSEA LO 90	0.065	0.063	RMSEA HI 90	0.08	0.079

MI—measurement model, MII—appropriate model, λ^2 is the minimum value of the discrepancy, λ^2/ss—is the minimum discrepancy divided by its degrees of freedom, CFI—the comparative fit index (Bagozzi 1981), AGFI—the adjusted goodness of fit index (Bagozzi 1981), p—is the probability of getting as large a discrepancy as occurred with the present sample. "p value" for testing the hypothesis that the model fits perfectly in the population, RMSEA—root mean square error of approximation (Browne and Cudeck 1992), RMSEA LO 90, RMSEA HI 90—contain the lower limit and upper limit of a 90% confidence interval for the population value of RMSEA
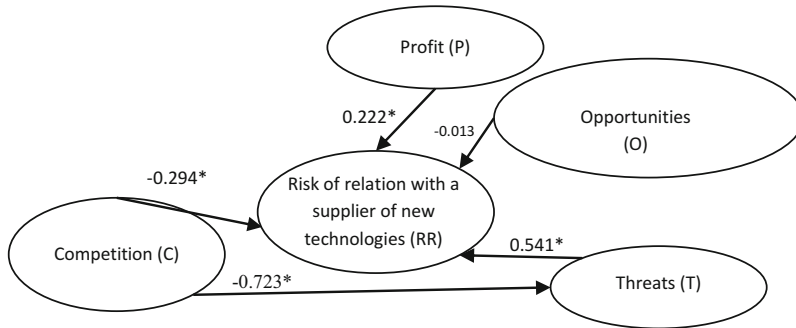Source: Author's proprietary study

Fig. 2 The theoretical model of the factors that determine the relation risk along with the determined standardized path coefficients. The standardized parameters are above the arrows; they were estimated in the course of the empirical research. ∗ means dependencies significant for $p < 0.05$. Source: Empirical results

- Positive between the perception of internal threats and relation risk (0.777)
- Positive between the financial result in the last 3 years and relation risk (0.242)
- Negative between the perception of competitiveness and relation risk
- (-0.689)
- Negative between the perception of threats and the perception of competitiveness (-0.726)

It is noteworthy that the perception of internal threats and the financial result in the last 3 years was growing increasingly strong and so was the perception of relation risk. However, as the average perception of competitiveness grows, the perception of relation risk decreases and so does, on average, the perception of internal threats. The empirical data do not fully substantiate the theoretical model. The proposed theoretical model is, however, better than the measurement model (Table 2).

The data in Table 2 confirms that for the two models no grounds exist to reject the hypothesis that the residues of standardized empirical and theoretical matrixes are equal to zero. The RMSEA coefficient shows a satisfactory fit of the measurement model and the structural model. Values of χ^2/ss point to the acceptability of the models. GFI and AGFI have the required values. The Akaike criterion denotes the structural model (Fig. 2).

The empirical data confirms that the perception of internal threats, the financial result in the last 3 years, and the perception of competitiveness, all affect relation risk in a significant and direct manner. Furthermore, the perception of competitiveness indirectly affects relation risk through the perception of internal threats. Consequently, the entire impact of perception of competitiveness on relation risk is -0.685 and it stems from direct impact (-0.294) and indirect impact (-0.391). The lower the value of competitiveness perception and the higher the value of an internal threat and of financial results in the past 3 years in an analysed company, the higher the value of the respondents in terms of relation risk. The higher value of

perception of competitiveness entails a lower value of perception of internal threats. The following have significant impact on the risk of relations (see Table 3):

- Perception of competitiveness. It is of a negative direct and indirect impact at a −0.685 level.
- Perception of internal threats. It is of a positive direct impact at 0.541.
- Financial results from the last 3 years. It is of a positive direct impact at 0.222.

The perception of internal opportunities is not relevant to the statistical impact of relation risk. This may result in failing to meet the threshold values of the observable variables within this construct. The obtained results confirm the results presented in the literature:

- Relation risk is adversely affected by the perception of competitiveness and positively affected by the perception of threats in the company's internal resources, as well as by the financial results of the last 3 years.
- Perception of competitiveness adversely affects the perception of threats.
- The significance of impact of the perception of internal opportunities on relation risk was impossible to confirm.

5   Summary and Conclusions

The empirical research has partially confirmed the theory that ambient variability, response to change, and risk awareness significantly affect relationship risk. The obtained results are an invitation to perform further in-depth analyses in the area of relation risk identification factors. An important element of research is to identify the factors underlying the use of the company's internal potential, or direct the search for opportunities toward the company's internal resources (Table 3).

In today's economy, risk management is becoming increasingly important. Based on the presented model, one can see that perception of relation risk is significantly affected by the financial results achieved in the last 3 years. This means that the better entrepreneurs understand what is important for cooperation, the better results they achieve. Furthermore, the model shows the significant adverse impact of the perception of competitiveness on relation risk. And so, the awareness of our competitiveness reduces relation risk, as everybody wants to cooperate with us. The results of the empirical research do not show the impact of threat perception on relation risk; this confirms the theoretical results as well and stems from the much greater awareness of the executives. The awareness of risk is one of the methods of minimizing it.

With the use of structural modeling, it was possible to show the cause and effect relationship between the selected latent factors determining the risk affecting relations with suppliers of new technologies. A limitation in the presented considerations is the data set, namely the opinions of the respondents, which are subjective by nature. What it means is that the perception was measured through the prism of a

Table 3 Standardized values of the estimated parameters in the measurement model and the structural model

Structural model		Measurement model	
Causal dependencies	Parameter	Correlation dependencies	Parameter
		P<-->O	−0.12
		T<-->O	−0.028
		O<-->C	0.01
RR<---O	−0.013	O<-->RR	−0.028
RR<---T	0.541***	T<-->RR	0.777***
RR<---P	0.222**	P<-->RR	0.242**
RR<---C	−0.294**	C<-->RR	−0.689***
C<---T	−0.723***	T<-->C	−0.726***
		P<-->T	0.104
		P<-->C	0.009

*p-value < 0.05, **$p < 0.01$, ***$p < 0.001$
Source: Author's proprietary study

respondent's subjective assessment. Moreover, limitations in the conceptual model being developed resulted from the critical analysis applied and the preliminary nature of the examination of the literature. Furthermore, a significant limitation to the empirical research is the operationalization of variables. In the future, it would be reasonable to expand the research by including in it all the observable variables identified in the literature. A limitation to the applied structural modeling method is the condition that a good model fit does not prove the theory, but only makes it more probable. The model supports the validity of the causal model, but it does not prove it, being only one of the potential explanations of the reality under study.

Appendix

Designation	Abbreviation	Factor assessed on the scale of 1–7	Cronbach's alpha (>0.8)	AVE (>0.5)	CR (>0.7)	Load factors >0.7	KMO (>0.5)	Bartlett's test of sphericity
T	T1	Company's weak position and negotiating power	0.842	0.572177	0.842352	0.794	0.784	606.609 ($p < 0.0001$)
	T2	Lack of effective control tools				0.735		
	T3	Insufficient marketing efforts				0.766		
	T4	Inadequate qualifications of the executives				0.729		
O	O1	Adequate management strategies, response plans	0.639	0.330513	0.655656	0.724	0.688	197.441 ($p < 0.001$)
	O2	Transfer of responsibility for decisions and disposal of profits				0.458		
	O3	Ensuring high quality level of provided services				0.471		
	O4	Effective use of resources, boosting productivity				0.605		
P	P1	Profit 2015	0.810	0.612879	0.822623	0.647	0.669	415.388 ($p < 0.001$)
	P2	Profit 2014				0.935		
	P3	Profit 2013				0.738		
C	CM	Market competition	0.958	0.8242288	0.9590551	0.904	0.906	2165.051 ($p < 0.0001$)
	CQ	Quality competition				0.956		
	CP	Price competition				0.868		
	CT	Technological competition				0.897		
	CPP	Product competition				0.911		
RR	EV	Ambient volatility	0.283	0.1403818	0.3218616	0.460	0.557	19.331 ($p < 0.001$)
	RCH	Response to changes				0.304		
	AR	Awareness of risk				0.343		

Source: Author's proprietary study

References

Aaker, D. A., & Bogozzi, R. P. (1979). Unobservable variables in structural equation models with an application in industrial selling. *Journal of Marketing Research, 16*, 147–158.

Anderson, J. C., & Gerbing, D. W. (1992). Assumption and comparative strengths of the two-steps approach. *Sociological Methods and Research, 20*, 321–333.

Anderson, J. C., & Narus, J. A. (1984). A model of the distributor's perspective of distributor-manufacturer working relationships. *Journal of Marketing, 48*(4), 62–74.

Anderson, S. W., Christ, M. H., & Sedatole, K. L. (2006). *Managing strategic alliance risk: Survey evidence of control practices in collaborative inter-organizational settings*. Florida: The Institute of Internal Auditors Research Foundation.

Bagozzi, R. P. (1981). Evaluating structural equation models with unobservable variables and measurement error: A comment. *Journal of Marketing Research, 18*(3), 375–381.

Browne, M., & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods and Research, 21*(2), 230–259.

Byrne, B. M. (2013). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. New York: Routledge (Taylor & Francis Group).

Carson, S. J., Madhok, A., & Wu, T. (2008). Uncertainty, opportunism, and governance: The effects of volatility and ambiguity on formal and relational contracting. *Academy of Management Journal, 49*, 1058–1077.

Cudeck, R. (1989). Analysis of correlation matrices using covariance structure models. *Psychological Bulletin, 105*, 317–327.

Curran, P. P. J., West, S. G., & Finch, J. F. (1996). The robustness of test statistics to non-normality and specification error in confirmatory factor analysis. *Psychological methods, 1*(1), 16–29.

Denzin, N. (2006). *Sociological methods: A sourcebook*. Chicago, IL: Aldine Transaction.

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research, 18*(3), 382–388.

Gefen, D., Straub, D. W., & Boudreau, M.-C. (2000). Structural equation modeling and regression: Guidelines for research practice. *Communications of AIS, 4*(7), 1–79.

Godfrey, P. P. C., & Hill, C. H. W. L. (1995). The problem of unobservables in strategic management research. *Strategic Management Journal, 16*, 519–533.

Hair, J., Jr., Anderson, R., Tatham, R., & Black, W. (1995). *Multivariate data analysis: With readings*. Upper Saddle River, NJ: Prentice-Hall.

Hoyle, R., & Smith, G. (1994). Formulating clinical research hypotheses as structural equation models: A conceptual overview. *Journal of Consulting and Clinical Psychology, 62*, 429–440.

Hu, L., Bentler, P., & Kano, Y. (1992). Can test statistics in covariance structure analysis be trusted? *Psychological Bulletin, 112*(2), 351–362.

Jöreskog, K. G., & Sorbom, D. (1979). *Advances in factor analysis and structural equation models*. Cambridge, MA: Abt Books.

Kline, R. B. (2005). *Principles and practice of structural equation modeling*. New York: The Guilford Press.

Loehlin, J. C. (1987). *Latent variable models: An introduction to factor, path and structural equation analysis*. New Jersey: Lawrence Erlbaum.

Lush, R. F., & Brown, J. R. (1996). Interdependency, contracting, and relational behaviour in marketing channels. *Journal of Marketing, 60*(4), 19–38.

MacCallum, R., Wegener, D., Uchino, B., & Fabrigar, L. (1993). The problem of equivalent models in applications of covariance structure analysis. *Psychological Bulletin, 114*, 185–199.

Meehl, P., & Waller, N. (2002). The path analysis controversy: A new statistical approach to strong appraisal of verisimilitude. *Psychological Methods, 7*(3), 283–300.

Mitrega, M. (2010). *Zdolność sieciowa jako czynnik przewagi konkurencyjnej na rynku przedsiębiorstw [Network capability as a factor of competitive advantage on the enterprise market]*. Katowice: Wydawnictwo Akademii Ekonomicznej [Publisher of the University of Economics].

Morgan, R., & Hunt, S. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing, 58*(3), 20–38.

Mueller, R. (1997). Structural equation modeling: Back to basics. *Structural Equation Modeling, 4*, 353–369.

Mühlböck, M., Warmuth, J., Holienka, M., & Kittel, B. (2017). Desperate entrepreneurs: No opportunities, no skills. *International Entrepreneurship and Management Journal, 13*(1), 1–23.

Pearl, J. (2000). *Causality: Models, reasoning and inference*. Cambridge: Cambridge University Press.

Rašković, M., & Mörec, B. (2013). Determinants of supplier-buyer relationship competitiveness in transnational companies. *Economic and Business Review, 15*(1), 5–31.

Rezazadeh, A., & Nobari, N. (2017). Antecedents and consequences of cooperative entrepreneurship: A conceptual model and empirical investigation. *International Entrepreneurship and Management Journal, 14*(2), 479–507.

Sagan, A. (2003). *Model pomiarowy satysfakcji i lojalności [Measurement model of satisfaction and loyalty]*. Cracow: Statsoft Polska.

Schieg, M. (2006). Risk management in construction project management. *Journal of Business Economics and Management, 7*(2), 77–83.

Schumacker, R., & Lomax, R. (1996). *A beginner's guide to structural equation modeling*. New York, NY: Routledge.

Sroka, W. (2009). Wykorzystanie modelu równań strukturalnych do oceny wpływu kapitału ludzkiego na sukces ekonomiczny przodujących gospodarstw Karpackich [Using the model of structural equations to assess the impact of human capital on the economic success of the leading Carpathian farms]. *Roczniki Nauk Rolniczych, G, 96*(4), 194–203.

Swiatowiec, J. (2003). *Modelowanie długookresowej orientacji dostawcy w relacji z nabywcą na rynku dóbr przemysłowych* [*Modeling of the long-term supplier's orientation in relation to the buyer on the market of industrial goods*]. Ph.D dissertation, Department of Management, Cracow University of Economics.

Światowiec-Szczepańska, J. (2012). *Ryzyko partnerstwa strategicznego przedsiębiorstw. Ujęcie modelowe [The risk of strategic partnership of enterprises: A model approach]*. Poznań: UE Poznań.

Urbanowska-Sojkin, E. (Ed.). (2013). *Ryzyko w wyborach strategicznych w przedsiębiorstwach [Risk in strategic choices in enterprises]*. Warsaw: PWE.

Westland, J. C. (2010). Lower bounds on sample size in structural equation modeling. *Electronic Commerce Research and Applications, 9*(6), 476–487.

High-Tech Leaders: Key Characteristics and Development in Russia

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Almira Yusupova and Sophia Khalimova

Abstract A high-technology sector is developing rapidly in many countries, which is having great influence on key economic performance indicators and national competitiveness levels. Special contribution to economic growth is made by fast-growing companies which could become global leaders. The case of Russian high-tech business is discussed in this chapter. Key characteristics of companies operating in this sector are identified and attention is paid primarily to high-tech leaders. A special scheme for leadership analysis, which is based on the top groups' comparison, is suggested and applied. Factors influencing companies' performance indicators are analyzed with the help of regression models. Data provided by Russia's Fast Growing High-Tech Companies' National Rating ("TekhUspekh") during 2012–2016 and by SPARK project were used. The results revealed that the Russian high-tech sector is characterized by a high level of uncertainty. A limited number of regions and sectors which form the basis for high-tech businesses were defined. The relationship between innovation activity's indicators and export potential was determined.

Keywords High-tech business · Stability and sustainability of market positions · Innovation activity

1 Introduction

High-tech companies play an important role in contemporary society, and are characterized by the fast spread of digital technologies that have great influence on technological, social, and economic development. In most cases such companies demonstrate impressive growth rates and make a significant contribution to the economic prosperity and independence of any country. The perspectives of the

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Russian economy, its structural changes and general improvements are related to high-tech and knowledge-intensive fields of activities. A significant increase of this sector could help to solve a number of serious problems and help overcome the existing wealth gap between it and other developed countries. Russian high-tech business is an interesting phenomenon; there are several companies which are very successful and famous; however, the general level of high-technology companies' development is rather modest. Therefore, the experience of national champions is valuable and needs to be analyzed. This research is based on the assumption that main contribution to economic prosperity is made by growing firms. A brief review of the literature on this topic is given in Sect. 2.

Our attention is focused on national leading high-tech companies which demonstrate high growth rates. Analysis is based mainly on data provided by Russia's Fast Growing High-Tech Companies' National Rating Project ("TekhUspekh") for the 2012–2016 time period. Section 3 contains a general description of the data set. We have compared leading groups (top 5, 10 and 20) constructed according to several indicators—revenue level, revenue growth rate, innovativeness level, and export potential. The special methodology of leadership analysis which was used is presented in Sect. 4. The results of leadership stability and sustainability analysis are shown in Sect. 5. It turned out that leading groups have limited intersections. Basing on this finding we suggest that the general level of uncertainty in the high-tech sector is rather high. Changes in leading groups are highly likely. Using the same database on national growing high-tech companies we have analyzed the relationship between their general performance indicators (revenue and innovativeness) and their characteristics including age, government support orientation, and export activities. It was proved that level of innovativeness is determined by export orientation. These results are discussed in Sect. 6. Some concluding remarks and comments are summarized in Sect. 7.

2 Literature Review

Researchers and experts pay special attention to firms which manage to have high growth rates during a long-term period. Birch justified their crucial role in the economy, calling such companies "gazelles" (Landström 2010). Many authors continued to study these companies, based on Birch's ideas. Acs and Mueller (2008) analyzed how new firms' market entrance influences regional employment indicators. Paying attention to the heterogeneity of entering firms, they confirmed that fast-growing gazelles play a special role in economic development.

Acs et al. (2008) also studied characteristics of gazelle firms; they suggested using one more important defining criterion—employees' number growth. Companies with high growth of turnover and number of employees were called "high-impact firms"; these enterprises generate high revenue per one employee and play a special role in national competitiveness creation. Such firms could be easily found in high-tech sectors, though in other areas they develop successfully as well. Coad et al.

(2014) have identified a number of methodological issues that should be taken into account when carrying out research on fast-growing companies, including definition and growth rates assessment. Moreno and Coad (2015), in their detailed and thorough review of publications concerning this topic, stressed that fast-growing firms attract special governmental attention as they could initiate multiple effects for the economy. It should be pointed out that state support does not necessarily reach its goals, and therefore, its definite forms and instruments need to be carefully analyzed and justified. Grilli and Murtinu (2014) studied the impact of government-managed and independent venture capital funds on the sales and employee growth of high-tech firms in Europe. It was shown that governmental actions could give a positive effect only when led by independent investors. Authors express doubt as to whether governmental support of high-tech firms, through a direct and active involvement in venture capital markets, is effective. It should be mentioned that in Russia, in contrast, the role of the government is very important.

Coad and Rao (2007) studied the relationship between number of employees and a company's innovative activity, having chosen sectors with a high number of patents. Lee and Clarke (2017), in their recent paper, investigated the effects of high-technology industries on the local economy, and the labor market in particular. The impact of high-tech growth on low and mid-skilled workers was analyzed. It was shown that high-tech industries have a positive jobs multiplier, creating local non-tradable service jobs and jobs for low-skilled residents.

Grundström et al. (2012) studied differences between fast- (gazelles) and slow-growing firms, paying attention to performance and innovative activities indicators. It was shown that fast-growing firms have higher profits, more employees, and a larger share of the domestic and international market. They also are characterized by a larger share of new products and incentives to risk and investments.

Some authors try to answer the question of how different types of innovation affect employment growth during different phases of the business cycle (Dachs et al. 2017). It was found that product innovation has a pro-cyclical effect on employment growth. Moreover, product innovators are more resilient to recessions than non-product innovators; however, the resilience was found only for SMEs but not for large firms.

Simon (2012) defined a special group of fast-growing firms which have a high level of innovative activity, but at the same time are not big. He called them "hidden champions" and showed the relationship between their number and diversity and perspectives of the national economy's development. Global leaders could appear on the markets with a significant number of small- and medium-size high-tech companies—techno gazelles.

Many structural disproportions of the Russian economy seem to be connected with a lack of big technological leaders which are competitive on global markets. The existence of techno gazelles, fast-growing small- and medium-size companies operating in high-tech areas, is a necessary condition for the appearance of large successful enterprises. No company could pretend to be a global leader at the moment of its creation; leadership can only be reached at certain stages of the life cycle. A number of applied and empirical papers are devoted to the identification and

analysis of companies which have such perspectives. Yudanov (2007) studies specific features of Russian fast-growing firms, pointing out their peculiarities; based on the case analysis he suggests that gazelles have an entrepreneurial nature.

Thus, fast-growing, innovative, high-tech companies' performance is considered to be an interesting research area. Since they could help to create potential global leadership, it is important to understand determinants, main trends, and rules of their development. Russian high-tech business has a complicated structure and demonstrates different trends, which sometimes are controversial. Its definitions, approaches to its analysis, and assessment are only being developed now.

The main goal of our research deals with the definition of characteristics of Russian high-tech leading companies and determination of the significant factors which have influence on their positions. Regional and industrial characteristics related to the external environment of high-tech entrepreneurship in general are taken into account.

3   Data Description: Russia's Fast Growing High-Tech Companies National Rating "TekhUspekh"

The empirical part of the research is based on the analysis of successful leading companies' performance indicators. The group of such companies is monitored and analyzed by the "TekhUspekh" national ratings project. A brief description of database is given below.

A national rating of fast-growing, high-technology companies has been prepared on a yearly basis since 2012. This project was a joint initiative of Russian Venture Company and Association of Innovative Regions, which was supported by RUSNANO Corporation and Small Enterprises Development Foundation. PricewaterhouseCoopers, Bank of SME Support and High School of Economics joined the project later. A rating is created based on the methodology of PricewaterhouseCoopers, which considers the following indicators: size of the company, rate of the revenue growth, development dynamics and technology level of the manufactured products or services rendered, as well as level of demand for the products on the international markets.

Companies take part in the project on a voluntary basis, but they have to meet very strict requirements in order to be included in rating. In 2016 these requirements included the following:

- Revenue level from 120 million to 30 billion rubles (10 bln. Until 2016)
- Annual revenue growth rate of no less than 15–20%
- Share of R&D costs of no less than 5% of revenue during the last three years
- Share of technological innovations costs of no less than 10% of revenue
- Share of new products is no less than 20–30% of revenue

Table 1 General characteristics of analyzed sample (2015)

Indicators	Groups defined according to revenue level, mln. rubles		
	"Small" <800	"Medium" 800–2000	"Large" 2000–30,000
Share in the sample, %	42	28	30
Average revenue, bln. rubles	0.4	1.3	5.7
Weighted average revenue, bln. rubles	2.2		
Revenue standard deviation, mln. rubles	206	333	4131

Source: "TekhUspekh"-2016

We used ratings for the period of time from 2012 to 2016 (they present data for the period of time from 2011 to 2015).

A number of average and relative characteristics of companies included in the analyzed sample are presented in Table 1.

Some performance indicators for our research were taken from the SPARK database, which provides information about companies registered in Russia, Belorussia, Ukraine, Kirgizstan, and Kazakhstan. This database is used by industrial companies, financial institutions, and tax authorities for financial, marketing, and investment analysis. Information provided by this data resource could also be used for research purposes. We looked at financial reports data of high-tech companies operating in the Siberian region; the results of this analysis are briefly shown in Sect. 5.

4 Methodical Scheme of Companies' Leadership Assessment

We use the scheme of leadership analysis which was suggested in our papers (Yusupova 2013). This approach was applied for the analysis of high-tech companies' leading positions. Basing on classical Industrial Economics, we compare different groups of leading companies. A leading group could be created according to different criteria—revenue level, growth rates, assets value, etc.

A "sustainable" leader is a company which is leading according to several criteria; it is included in several top groups. Such firms determine market structure and trends of its development. "Stability" of firm's leading position in our approach means that it remains in the group of top companies (at least according to one criterion) during several (more than one) years (it reflects long-term leadership).

Thus, our scheme assumes the selection of criteria, companies' ranking, creation, and comparison of leading groups. The existence of intersections between these groups is identified. Summing up the definitions described above, we could formulate that the leading position of the firm is sustainable and stable if this position is based on various criteria and at least according to one of them persists for a number

of years. Definition of top group size is important; it is possible to choose 5, 10, 20, etc. leading firms. Actually the same problem arises under the calculation of classical concentration ratios CRn, so the same arguments for the group's size selection could be used here. It is necessary to point out that the main task deals not with assessment of individual firms' positions but with the identification of sustainable and stable leaders' existence.

We suggest a special calculable indicator—sustainability (and stability) coefficient (CS).

$$CS = 1 - \frac{N_{fact} - N_{min}}{N_{max} - N_{min}} \tag{1}$$

where:

N_{fact}—real number of leading firms included in all sets
N_{min}—minimal possible number of leading firms included in all sets– this number is equal to the group size– 5, 10, etc.
N_{max}—maximum possible number of leading firms included in all sets—this number is equal to the group size multiplied to the number of criteria; for example, if top 5 lists according to three criteria are considered, it is 15

Data on leading groups formed according to several criteria based on a particular year are compared in order to analyze sustainability of leadership. Stability of leadership deals with the comparison of leading groups formed based on one criterion for several years. The same scheme and formula are used in both cases.

These coefficients vary from 0 to 1. If the sustainability coefficient turned out to be 0, it means that leadership is unsustainable and leading groups have no intersections. If it is equal to 1, it means that leadership is absolutely sustainable and all leading groups are similar. A high level of coefficient is related to sustainable leaders' existence. They occupy strong positions and it is possible to predict future development of the market based on their performance. A sustainability coefficient is low when the total number of such firms is small. In these cases, the level of uncertainty is rather high and significant changes could be expected.

The same explanation could be suggested for stability analysis. If the coefficient is equal to 1 then leadership is stable; leading groups of different years include the same companies. If it is equal to 0, leadership is unstable; the composition of leading group is changing every year.

This scheme is rather tentative and the results depend on the number of leading firms and leadership criteria chosen. For example, there could be sets with 5 sustainable and stable leaders, while groups of 10 and 20 leaders have few intersections. We consider that all these aspects are interesting and should be taken into account within the analysis.

5 Sustainability and Stability of High-Tech Companies' Leadership

According to the "TekhUspekh" methodology, different groups of leading companies are formed on a yearly basis; therefore, our scheme of leadership analysis could be applied in this case. Stability and sustainability assessments, to some extent, reflect possibilities and perspectives of high-tech companies' growth. Stable and sustainable leadership in rating reflects the existence of a specific core of high-tech innovative companies, which should be primarily supported by the state. Optimistic forecasts concerning high-tech business development could be developed in this case.

The results of our analysis of leadership stability and sustainability are presented below. Groups of top 5 and 10 companies were analyzed for the 2012–2016 period, top 20 firms—for 2013–2016. Companies were ranked according to revenue level, revenue growth rates, innovativeness level and export potential. The last indicator was introduced in 2015.

Innovativeness level is determined based on the share of new products, R&D and technological innovations expenditures share in revenue and expert's assessments. The last component is considered to be the most important. Export potential is calculated according to share of export revenue and opinions of members of the experts' committee, which consists of well-qualified and recognized practitioners, researchers, analytics and consultants.

Following conventional marks were used in the results' description:

R—annual revenue
G—revenue growth rates
I—innovativeness level
E—export potential (considered since 2015)

5.1 Leadership Stability

Leadership stability indicators are presented in Table 2.

Table 2 Leadership stability coefficients (2012–2016)

Criterion for leading group formation	Leading group size		
	Top 5	Top 10	Top 20
Annual revenue R	0.20	0.28	0.55
Revenue growth rates G	0.20	0.30	0.35
Innovativeness level I	0.20	0.35	0.30
Export potential E	0.40	0.20	0.15

Source: Authors' own calculations

In general, stability coefficients turned out to be not high. We observed equal stability coefficients in the top 5 groups formed according to revenue, growth rates, and innovativeness level (all coefficients here are equal to 0.20). The coefficient for export potential is higher; this means that the same firms were more often included in top 5 lists of different years. For top 10 groups, growth rates stability (0.30) is slightly higher than revenue stability (0.28) and export potential stability (0.20). But at the same time, it is lower than innovativeness stability (0.35). A rather significant difference between revenue level and growth rates stability was observed only for top 20 groups.

Our results show that larger groups of leaders demonstrate higher stability. Top 20 groups formed according to revenue level turned to be much more stable than top 10 and top 5 groups. The same relationship was observed for growth rates groups, although differences were not so considerable. Top 20 lists of most innovative and exporting companies were more changeable.

It should be noted that leading firms present a rather limited number of industries and regions. Top 20 companies are from such regions as Moscow, St. Petersburg, Yekaterinburg, Kaluga, Moscow oblast, Novosibirsk, Tomsk and several others. Leading companies deal with biotechnologies, pharmaceutical, informational, and communicational technologies, materials, machine building, electronics, oil, and gas.

We consider that it is quite natural that the number of industries is limited; they form the high-tech business foundation and reflect certain trends. However, for regions, these characteristics could be interpreted rather negatively since they deal with territorial limitations and inequality of high-tech production development in Russia.

5.2 Leadership Sustainability

Leadership sustainability reflects the existence of the companies which are included in several leading groups formed according to different criteria. Some results of the sustainability analysis are presented in Tables 3 and 4.

Years 2013 and 2014 are marked by rather low leadership sustainability (Table 3). Zero coefficients could be found here; they reflect totally unsustainable leadership, according to revenue and growth rates indicators. This means that not a single company from the top 10 in revenue was included into top 10 in growth rates. Higher coefficients were observed for top groups in innovativeness and growth rates; this reflects the positive relationship between a company's growth and its innovative activities.

Leadership sustainability increased in 2015 and many groups of leaders have noticeable intersections. Companies with high revenue levels demonstrated meaningful growth rates during this year. Innovative companies were also leading in export activities. Based on the results of this step, we could propose positive trends

Table 3 Leadership sustainability coefficients

Criteria of leading groups formation	Top 10			Top 5		
	2013	2014	2015	2013	2014	2015
R-G-I	0.15	0.25	0.50	0.10	0.00	0.00
G-I	0.20	0.30	0.20	0.20	0.00	0.00
R-G	0.00	0.00	0.30	0.00	0.00	0.00
R-E	–	–	0.00	–	–	0.80
I-E	–	–	0.50	–	–	0.20
G-I-E	–	–	0.35	–	–	0.10
R-G-I-E	–	–	0.40	–	–	0.33

Source: Authors' own calculations

Table 4 Leadership sustainability coefficients for 2016

Leading group	Criteria of leading groups formation					
	I-E	G-I-E	R-G-I-E	R-I-E	R-I	R-E
Top 5	0—Absolute unsustainability					
Top 10	0.30	0.15	0.10	0.15	0.00	0.00
Top 20	0.20	–	–	0.23	0.10	0.05

Source: Authors' own calculations

in high-tech business development. However, the data in 2016 did not meet these expectations; results for that year are shown in Table 4.

The situation changed radically and sustainability indicators had significantly decreased. Some intersections were observed only for top 10 groups formed according to innovativeness and export potential (this is also true for top 20 groups). Such relationship reflects the orientation of many innovative companies to external markets. Weak leadership sustainability in innovativeness and revenue level was observed for top 20 groups although compared with the previous year, corresponding coefficients decreased. Many top groups have no intersections at all, which means there is a total unsustainability of leadership.

5.3 Regional Level of High-Tech Companies' Leadership Sustainability and Stability

The Russian economy in general and high-tech business in particular are characterized by a high level of regional heterogeneity. We have mentioned already that national leaders are located in a limited number of regions. We looked briefly at the regional level based on the case of Siberia. Stability and sustainability of leadership of Siberian high-tech companies were analyzed using the same scheme. Data from the SPARK database were used for the calculations. It should be noted that four Siberian high-tech companies are included in the "TekhUspekh" rating analyzed above. In order to have comparable results, we selected only revenue and revenue

Table 5 Stability and sustainability of Siberian companies' leadership (SPARK data)

Criterion for leading group formation	Coefficients		
	Top 5	Top 10	Top 20
Annual revenue 2014–2015 (R)—Stability	0.80	0.90	0.95
Annual revenue—Revenue growth rates (R-G), 2015—Sustainability	0.20	0.10	0.05

Source: Authors' own calculations

growth rate as observed indicators. Data for 2014 and 2015 were analyzed. We looked for intersections between revenue leaders groups formed in 2014 and 2015 (this step was done for stability assessment). Using 2015 year data, we determined whether the largest firms had the highest growth rates. Results are presented in Table 5.

Obtained results reflect the higher stability of Siberian companies' leadership. The data show that the groups of top largest firms are stable; the highest coefficient corresponds to top 20 groups, which means that mostly the same firms remain in the top 20 list from year to year. Top 5 group turned to be less stable, although here coefficients are also higher than for "TekhUspekh" companies (0.80 and 0.20 correspondingly).

As for leadership sustainability, it should be mentioned that coefficients turned out to be rather low. Large Siberian companies, in most cases, are not fast-growing ones. It is interesting to point out that stability coefficients increase as group size increases while sustainability indicators demonstrate the opposite tendency. It should be also noted that in 2015, the sustainability of top 10 groups in revenue and growth rate for Siberian companies was lower than for "TekhUspekh" members (0.10 and 0.30 correspondingly).

In trying to define key characteristics of contemporary high-tech business leading representatives, we analyzed the whole set of companies included in the "TekhUspekh" rating in 2016.

6 Analysis of Determinants of Development of Leading High-Tech Companies

Using correlation and regression analysis, we analyzed the relationship between separate indicators describing firms' behavior and position according to the data of all participants of the rating of "TekhUspekh"-2016 (data on 100 companies were analyzed). Paired correlation coefficients between indicators were calculated and linear regression models (using OLS) were evaluated. Some general characteristics of the sample have been already given earlier. Table 6 shows variables used for the analysis.

We should note that, of course, all the companies can sell their products both to governmental institutions and to private enterprises; however, the variable used

Table 6 Variables used for calculations

Variable	Explanation	Descriptive statistics	
TR	Company's revenue, mln. rubles	Average	2108
		Mode	126
		Mean	1061
innov	Level of innovativeness, position in general rating (1–100)	–	
dist	Distance from the capital—Moscow, km	Average	834
		Mode	0
		Mean	656
age	Company's age, number of years	Average	23
		Mode	25
		Mean	19
gov	Orientation to state orders (dummy: 0 no; 1—state—one of the key partners; 2—state—main buyer)	0: 27 companies	
		1: 47 companies	
		2: 26 companies	
Ex	Export potential (1–66 position in rating, 80—very little export, 99—no export)	–	

Source: Authors' own calculations

Table 7 Correlation coefficients between separate indicators

		dist	age	TR	gov	innov	Ex
dist	Coef.	1	−0.083	0.029	−0.135	−0.086	−0.066
	p-value		0.412	0.778	0.180	0.396	0.512
age	Coef.	−0.083	1	0.230*	0.439**	0.099	0.081
	p-value	0.412		0.026	0.000	0.328	0.424
TR	Coef.	0.029	0.230*	1	0.244*	0.100	0.094
	p-value	0.778	0.026		0.018	0.336	0.369
gov	Coef.	−0.135	0.439**	0.244*	1	0.095	0.071
	p-value	0.180	0.000	0.018		0.347	0.484
innov	Coef.	−0.086	0.099	0.100	0.095	1	0.959**
	p-value	0.396	0.328	0.336	0.347		0.000
Ex	Coef.	−0.066	0.081	0.094	0.071	0.959**	1
	p-value	0.512	0.424	0.369	0.484	0.000	

Source: Authors' own calculations
*Significant at 5% level of significance
**Significant at 1% level of significance

(gov) indicates the degree of involvement in filling the state orders and orientation to (and consequently the dependence on) the state. The absence of exports can take place for various reasons and does not always indicate low competitiveness of the firm. For example, there is no export if the firm works solely for the state defense order or a large domestic company. The higher the position in the rating (1 being the highest) means the higher is the export potential.

Correlation coefficients between the variables are shown in Table 7. In the table we give only the Pearson correlation coefficient, which indicates the linear dependence between the variables.[1]

Calculations show that there is positive correlation between level of innovativeness and a company's export potential, with the correlation coefficient being close to 1. We can say that innovative companies are successfully engaged in export; consequently growth of national competitiveness could be associated with innovative business development. For the leaders in export potential, which also have a high level of innovativeness, export gives a substantial part of revenue: the first 8 companies in the rating receive more than 50% of their revenue from export activities (moreover for the 4 of them, the share is 90%) and 13 companies have the share of export of larger than 25% of their revenue.

It was found out that orientation to the state orders is positively correlated with the age of the company and its revenue and negatively with the distance to the center (however, p-value is rather low, only 0.180). We can assume that the state (as the customer) prefers to deal with more mature, reliable, and large companies that are closer to Moscow. Mature companies are more reliable and they have good reputation and experience; therefore, it is easier for them to become a partner of state enterprises and institutions. On the one hand, large companies have a number of objective advantages, and on the other hand, state orders often contribute to revenue growth. Analysis also showed that the age of the company is positively correlated with its revenue. Large firms are often more mature ones, which is conditional to the peculiarities of their development at different stages of the life cycle.

Further, we performed regression analysis with the explained variable being company's revenue (TR) and level of innovativeness (innov). We have chosen these variables as they indicate companies' performance. Revenue itself is a general resulting indicator and level of innovativeness is an integral indicator of technological development.

In our calculations variable gov—orientation to state orders—is a dummy variable and takes three values (with no constant included):

gov0—no state buyer among key partners
gov1—state is one of the key partners
gov2—state is the main buyer

Combinations of the regressors were formed taking into account the correlation between them, revealed in the previous step. Only one combination of the regressors can be used. In our calculations we use the natural logarithm of the revenue to assess its elasticity. Thus, two models were built.

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[1]In addition, Kendall and Spearman correlation coefficients were calculated. They allow the capturing of nonlinear dependence. Obtained values of all the coefficients appeared to be very close and had the same significance level. That is why we show the results only for the Pearson correlation coefficient.

Table 8 Regression analysis results: factors influencing revenue (lnTR)

	Coefficient	p-value
Ex	-0.001	0.793
gov^0	6.266^{**}	0.000
gov^1	7.034^{**}	0.000
gov^2	7.538^{**}	0.000
R-square	0.973	
F-statistics (p-value)	818.482 (0.000)	
Number of observations	94	

Source: Authors' own calculations
**Significant at 1% level of significance

Table 9 Regression analysis results: factors influencing innovativeness (innov)

	Coefficient	p-value
Ex	0.804^{**}	0.000
gov^0	5.233^{*}	0.014
gov^1	5.030^{**}	0.005
gov^2	7.423^{**}	0.001
R-square	0.981	
F-statistics (p-value)	1222.592 (0.000)	
Number of observations	100	

Source: Authors' own calculations
*Significant at 5% level of significance
**Significant at 1% level of significance

$$ln\,TR_i = b_1 * gov_i^0 + b_2 * gov_i^1 + b_3 * gov_i^2 + b_4 * ex_i + e_i \qquad (2)$$

$$innov_i = b_1 * gov_i^0 + b_2 * gov_i^1 + b_3 * gov_i^2 + b_4 * ex_i + e_i \qquad (3)$$

The main results for these models are shown in Tables 8 and 9.

The obtained results show that presence of the state among main buyers makes the revenue more elastic. If the company is entirely oriented to the state orders, this relation becomes even stronger. In this model, the age of the company appeared to be insignificant. It should be noted that the explanatory power of the model is high. However, it should be mentioned that the set of consumers is not limited to state customers and foreign companies; inclusion of all possible consumers in the model goes beyond the scope of the research.

The level of innovativeness is also connected to the dependence on the state; however, this relation is not clear-cut. According to the results of the calculations, presence as well as absence of state orders contributes to innovative activity. Further research is needed to explain these dependences.

The regression analysis results completely confirmed the previously mentioned relationship between a company's innovative and export characteristics. A high level of innovativeness is explained by significant export potential of the company. The companies included in "TekhUspekh," of course, are notable players in their markets, and in the short term they can be among the world leaders (49% of companies consider this likely).

7 Conclusion

The analysis of high-tech companies' performance indicators revealed significant uncertainty of the highly technological sector in Russia. Only regional and industrial characteristics of high-tech leaders are certain and predictable. A limited number of regions and industries are considered to be basic for high-tech sector development. Industrial limitations seem to have an objective nature as they define breakthrough line, have special importance and are officially recognized and approved by government. Regional borders also have an objective nature but they rather show the imbalance and limitations of the high-tech business economic development.

If a stable and sustainable high-tech leaders' core existed, companies forming this core would play an important role in the growth of national competitiveness. However, results of leadership analysis do not provide enough information for optimistic forecasts concerning appearance of such a core in the short-term future.

Stability and sustainability indicators do not demonstrate positive trends; companies which potentially could become global leaders need state support and encouragement in order to keep their positions. The importance of state support of leading high-tech companies was confirmed by results of regression analysis aimed to determine key factors influencing their activities.

Currently, the performance of the most innovative high-tech companies is related to their orientation to external markets. As contemporary high-tech business has a complicated and uncertain nature, it is difficult to formulate final and categorical conclusions. Further steps of research deal with more data analysis in order to reveal their characteristics, success factors and barriers for development.

References

Acs, Z. J., & Mueller, P. (2008). Employment effects of business dynamics: Mice, gazelles and elephants. *Small Business Economics, 30*, 85–100.

Acs, Z., Parsons, W., & Tracy, S. (2008). *High-impact firms: Gazelles revisited*. Washington, DC: Corporate Research Board, LLC.

Coad, A., & Rao, R. (2007). *The employment effects of innovations in high-tech industries* (Papers on Economics & Evolution #0705) [pdf]. Accessed May 5, 2017, from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.722.488&rep=rep1&type=pdf

Coad, A., Daunfeldt, S.-O., Hölzl, W., Johansson, D., & Nightingale, P. (2014). High-growth firms: Introduction to the special section. *Industrial and Corporate Change, 23*(1), 91–112.

Dachs, B., Hud, M., Koehle, C., & Peters, B. (2017). *Employment effects of innovations over the business cycle: Firm-level evidence from European countries* (SPRU Working paper series, SWPS 2017-003) [pdf]. Accessed May 10, 2017, from https://www.sussex.ac.uk/webteam/gateway/file.php?name=2017-03-swps-dachs-et-al.pdf&site=25

Grilli, L., & Murtinu, S. (2014). Government, venture capital and the growth of European high-tech entrepreneurial firms. *Research Policy, 43*(9), 1523–1543.

Grundström, C., Sjöström, R., Uddenberg, A., & Rönnbäck, A. O. (2012). Fast-growing SMEs and the role of innovation. *International Journal of Innovation Management, 16*(3), 1240003–1240022.

Landström, L. (2010). *Pioneers in entrepreneurship and small business research*. New York: Springer US.

Lee, N., & Clarke, S. (2017). *Who gains from high-tech growth? High-technology multipliers, employment and wages in Britain* (SPRU Working paper series, SWPS 2017-014) [pdf]. Accessed October 17, 2017, from https://www.sussex.ac.uk/webteam/gateway/file.php?name=2017-14-swps-lee-and-clarke.pdf&site=25

Moreno, F., & Coad, A. (2015). *High-growth firms: Stylized facts and conflicting results* (SPRU Working paper series, SWPS 2015-05) [pdf]. Accessed February 12, 2017, from https://www.sussex.ac.uk/webteam/gateway/file.php?name=2015-05-swps-morenocoad.pdf&site=25

Simon, H. (2012). *Hidden champions: Aufbruchnach Globalia*. New York: Campus Verlag.

Yudanov, A. Y. (2007). "Fast" firms and the evolution of the Russian economy. *Voprosy Ekonomiki, 2*, 85–100.

Yusupova, A. (2013). Market power of big corporations: Characteristics and regional differences. *Region: Economics and Sociology, 4*, 281–299.