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Bogumiła Zuga 32A Str.
01-811 Warsaw, Poland
T: +48 22 701 50 15

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ENHANCING THE VALUE OF LIFESTYLE BUNDLES

Michael Levens

Walsh College, Troy, MI, USA, mlevens@walshcollege.edu

Abstract

Research purpose. The study of marketing a lifestyle offering involves allowing brands from different categories to collaborate in giving, essentially, a new offering as a bundle to consumers. This is particularly important for brands operating in segments that have a significant loyalty or in segments that have become or are becoming commodities. A lifestyle offering can span categories and address latent consumer attitudes such as aspiration and convenience. Lifestyle bundles were introduced as a "way of life that individuals express by choosing to allocate their time and personal resources to a single package of two or more goods or services that they believe represent their current or desired way of life" (Levens, 2010). The initial research on lifestyle bundles was contextualized through a bundled multi-category luxury offering, targeting affluent consumers, which was built on the concepts of luxury marketing, bundling and the needs, attitudes and behaviours of affluent consumers. The bundle items include a home, a vehicle and a vacation club. This paper revisits the original work on this topic and explores ways to enhance interest in the underlying bundle proposition.

Design / Methodology / Approach. The methodology to explore enhancements to the lifestyle bundles involved re-analyzing the data cube used to develop the inaugural lifestyle bundle research (Levens, 2010). The data cube was mined to identify individual preferences to increase consumer interest in the original concept. The underlying argument is that adjusting the lifestyle bundle items may increase consumer interest in the overall concept. The analysis presented in this paper was completed through statistical description using SPSS software.

Findings. The initial concept evaluation identified a non-trivial level of interest in the lifestyle bundle consisting of a home, a vehicle and a vacation club. This paper identifies modifications to the bundles that would increase consumer interest among rejecters and supporters of the lifestyle bundle concept. While novelty was acknowledged as a reason for consumer interest, it was clear that utility derived from convenience and lifestyle expression was the basis for many consumers supporting the concept. Concept rejecters also noted these attributes as influencing their opinions. Elimination of the vacation club offer from the lifestyle bundle would have the greatest impact on increasing rejection. Adding home and vehicle insurance to the lifestyle bundle would have the greatest impact on enhancing the value proposition for concept supporters.

Originality / Value / Practical implications. Lifestyle bundles are a novel approach for marketers to differentiate their products and create new opportunities among consumers who might have not previously considered their products or services. Enhancing the lifestyle bundle offer can only increase those opportunities.

Keywords: Conjoint research; Lifestyle bundles.

JEL code: M31.

Introduction

The study of marketing a lifestyle offering involves allowing brands from different categories to collaborate to give, essentially, a new offering as a bundle to consumers. This is particularly important for brands operating in segments with significant loyalty or in segments that have become or are becoming commodities. A lifestyle offering can span categories and address latent consumer attitudes such as aspiration and convenience. *Lifestyle bundles* were introduced as a "way of life that individuals express by choosing to allocate their time and personal resources to a single package of two or more goods or services that they believe represent their current or desired way of life" (Levens, 2010). The initial research on lifestyle bundles was contextualized through a bundled multi-category luxury offering, targeting affluent consumers, which was built on the concepts of luxury marketing, bundling and the needs, attitudes and behaviours of affluent consumers. The bundle items include a

home, a vehicle and a vacation club. This paper revisits the original work on this topic and explores ways to enhance consumer interest in the underlying bundle proposition.

Literature Review

The increasing competition between brands and commoditization of many market categories provided the impetus for original work on lifestyle bundles (Levens, 2010). The concept of bundling and its influence on consumer behavior provided the framework for constructing and testing the original bundles. That relationship also provides context when considering enhancements to lifestyle bundles.

Differentiation remains a strategic approach when attempting to increase perceived value for a particular target. Primary strategies to achieve differentiation include innovation, enhancing customer relationships and bundling (Freeman *et al*., 2004). Bundling represents the idea that a combined offering of products is perceived to offer greater value to consumers than when the individual components of the bundle are sold independently (Levens, 2016). When that combined offering spans different market categories, purchase decisions can be linked, which would influence consumer behavior (Shocker *et al*., 2004).

Utility theory, the idea that consumers will consider all available information in a comprehensive manner when making purchase decisions, is considered the foundation for many econometric models and is quite commonly mentioned in the bundling literature (Warsh, 1989). Gaeth et al. (1990) argue that consumers evaluate bundles by averaging individual utilities of each item within the bundle. However, bundling research introduces other consumer behavior factors that must be considered. Oppenwal & Holyoake (2004) note that specific bundles can reduce search and transaction costs and that consumers often want that a pre-developed bundle should "fit" together. Gwin and Gwin (2003) contribute the idea that products should be considered a collection of attributes and that consumers select products and services based on those attributes.

Research into lifestyle bundles was designed to explore the interaction between bundling and consumer behavior. Lifestyle marketing, previously referenced in the literature either as a marketing communication theme or marketing segmentation variable, was selected as the platform to build lifestyle bundles (Levens, 2010). The question posed was "can the lifestyle itself be the product?" Levens (2010) found that there was non-trivial interest in the lifestyle bundle and that convenience was a significant factor in generating utility. Now that the question has been answered affirmatively that lifestyle itself can be the product, the next question is "can the lifestyle product be enhanced?"

Methodology

The methodology to explore enhancements to the lifestyle bundles involved re-analyzing the data cube used to develop the inaugural lifestyle bundle research (Levens, 2010). The data cube was mined to identify individual preferences to increase consumer interest in the original concept. The underlying argument is that adjusting (removing, adding or replacing) lifestyle bundle items may increase overall interest in the concept.

The concept evaluation statement was as follows:

A new concept in lifestyle marketing: A single luxury offer purchased at one time consisting of a home, a vehicle, and a vacation club designed specifically to fit your needs, wants and desires. Whether you prefer to lease or buy, there are numerous financing options that span timeframes between 3 and 30 years. The process would begin with an in-person consultation with a trained lifestyle consultant that would involve listening to your interests and desires in addition to administering a set of specific questions to help identify the best lifestyle fit. A personalized profile would be developed by the lifestyle consultant and prepared for your consideration.

Design

The original data set was created through an online survey research including screener questions and a confidentiality agreement for the concept test. The main question architecture covered ownership

profile, purchase horizon, attitudinal questions, concept exposure through a choice scenario and concept purchase interest factors and non-interest factors as well as classification questions. The total number of exposure questions, depending on skip patterns, typically exceeded 60. Lifestyle bundle utility was generated using choice-based conjoint analysis (Raghavarao *et al*., 2010).

A D-Optimal design algorithm was used to generate 4 blocks of 6 pairs of alternatives for respondents to evaluate (Xu, 2002). The conjoint exposure included combinations of a home, a vehicle and a vacation club as well as the choice to select none of the combinations over different time horizons ranging from 3 to 30 years. Beyond the conjoint design, a seven-point anchored rating scale was used for the evaluation of the overall concept to enhance the precision of utility calculation. Segment clusters based on concept evaluation were created using a variant of the K-means procedure known as the Howard–Harris algorithm (Howard & Harris, 1966). While segmentation was an important part of the original study, this analysis focuses solely on concept evaluation in the aggregate. Given that the research objective is to identify items to enhance interest in lifestyle bundles, the original responses, which directly addressed these questions, were analyzed and results were presented in the form of a histogram. The data cube was stored as an SPSS file.

Sample and Data Collection Plan

The sample parameters were established to include US consumers aged 18 and older with an annual household income equal to or greater than $150,000. Additional screening criteria included sole or shared decision-making for major capital purchases. The study sample was drawn from over 3 million participants in the Greenfield Online (GOL) managed Internet panel. A double opt-in protocol as part of the self-selection process was initiated through personalized email invitations. Participants were compensated for their involvement through sweepstakes entry and nominal remuneration. Data was collected by GOL and stored in an SPSS database.

The plan was designed to generate 600 completed surveys to allow for necessary statistical analysis at sub-group levels such as age, gender and household income. The survey spanned 25 minutes in average length, which was five minutes longer than the pre-tested duration, and posed several challenges. As many as 789 participants abandoned the survey, which was higher than expected even at the chosen income level. The survey was left open for several additional days, which amounted to 8 total days for survey completion, to generate the necessary completed surveys. There was a gender response imbalance, with 80% female and 20% male participation, during the first few days of data collection, which pointed to the possibility of weighting techniques to be introduced. However, the gender gap closed to 65% female and 35% male, which was much closer to normative response levels for the tested income ranges, by the time the survey drew to a close. As a result, no weighting protocols were applied. Fifty-nine percent of the sample claimed household incomes ranging from $150,000 to $199,999, 29% claimed household incomes from $200,000 to $299,000, and 10% claimed household incomes from $300,000 to $999,999. Two percent of the sample claimed household incomes of $1,000,000 and higher.

While plan budget had the greatest impact on the final number of completed surveys, a number of design criteria were considered when determining the final sample. Issues included the ability to ensure proper sample representation and manage sample error while completing a wide range of statistical analyses (Alreck & Settle, 1995; Gay & Diehl, 1992; Krejcie & Morgan, 1970). Any actions taken to fulfill the plan such as sending out additional invitations to targeted groups followed generally accepted industry protocols.

Results

The focus of this analysis is to share the reactions of the respondents for enhancing the concept of the lifestyle bundle. The initial step in this process is to document the baseline response from the original research. Figure 1 identifies the distribution of ratings made for concept consideration. Almost one in five respondents rated the concept at 5, 6 or 7 in a 7-point scale. Adding an item “might or might not consider” rating of 4 to the prior group, the total responses increase to 46%. Fifty-six percent of the

respondents rated the concept at 3 or lower. It is important to note that, among those rating the concept at 3 or lower, almost 9% claimed to know someone else who might be interested in the concept.

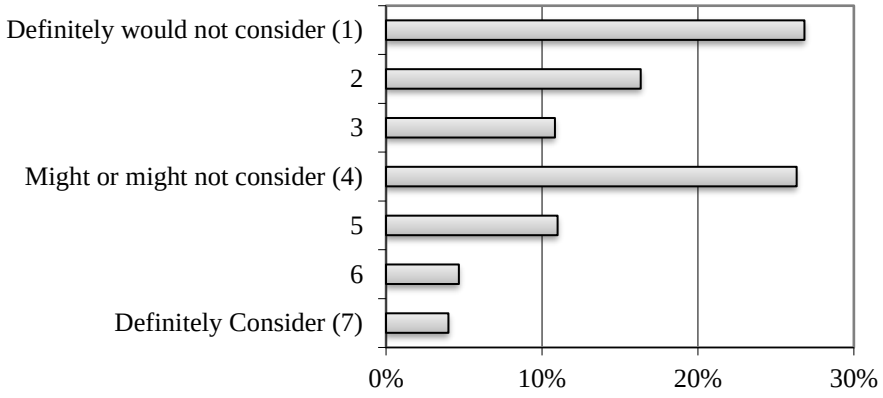

Fig. 1. Overall Concept Rating

Those who rated the concept between 4 and 7 identified the ability to "work with a single point of contact," "allows expression of lifestyle," and "convenience" as the three leading reasons for considering the concept in a positive light. Figure 2 illustrates the top mentioned reasons for considering the concept.

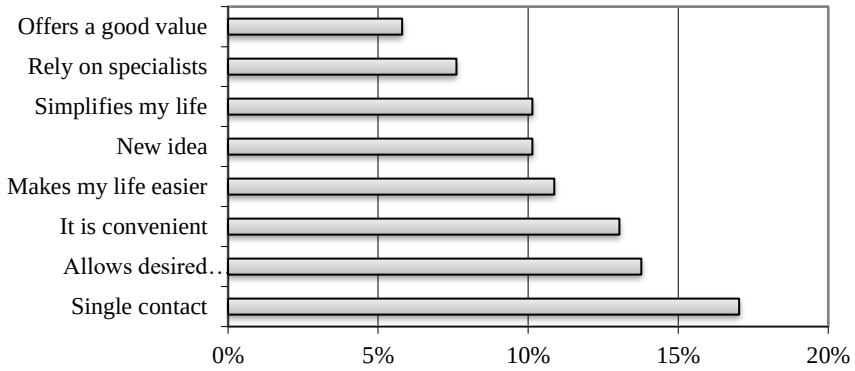

Fig. 2. Top Mention – Reason for Purchase Consideration

The novelty of the concept also contributed to its consideration by respondents. Figure 3 illustrates the level of uniqueness associated with the concept among those rating the concept at 4 or higher.

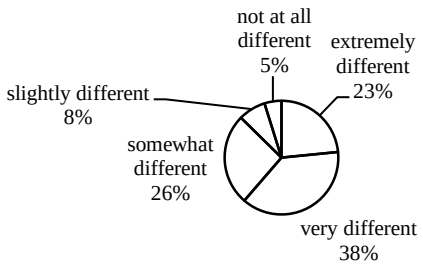

Fig. 3. Uniqueness among Those Who Support Concept

Among those who rated the concept at 4 or higher, products and services were identified that would contribute to increasing their concept consideration rating beyond the current level. Figure 4 illustrates that insurance for the vehicle and home are the top rated enhancements to the concept to increase its consideration. Note that figure 4 is not based on top mention but instead includes multiple mentions.

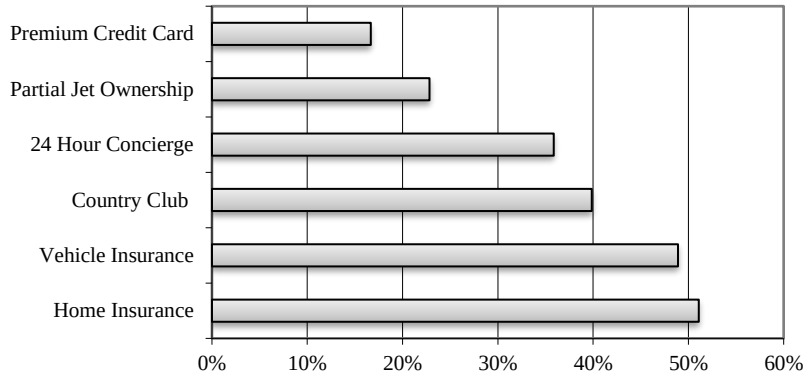

Fig. 4. Additions to Concept to Increase Consideration among Supporters

Among those who did not express interest in the concept by rating it at 3 or lower, the primary reasons for a lack of interest included a desire to retain the ability to make individual decisions within each category and not being in the market (currently shopping) for one or more of the products. Figure 5 illustrates the top mentioned reasons for rating the concept 3 or lower.

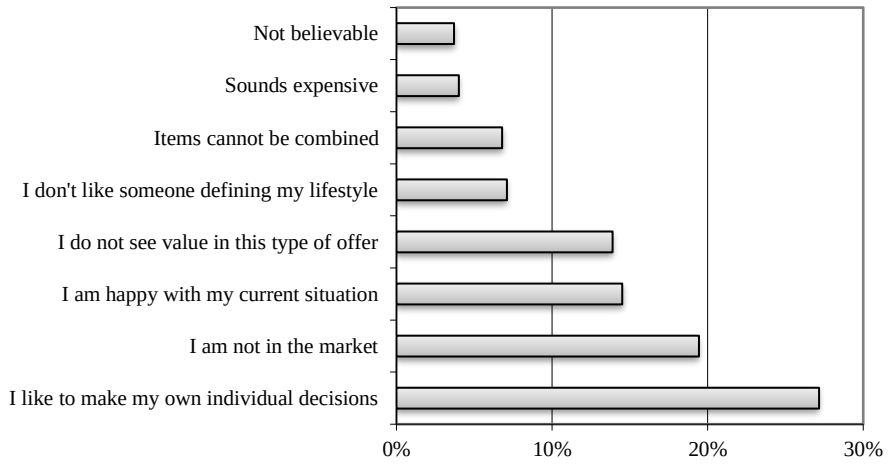

Fig. 5. Top Reasons Not Interested in Concept

Among those rating the concept at 3 or lower, 24.7% of the respondents mentioned that deleting the vacation club from the bundle would increase their concept interest to 4 or higher. Figure 6 illustrates the effect of deleting each of the bundle elements.

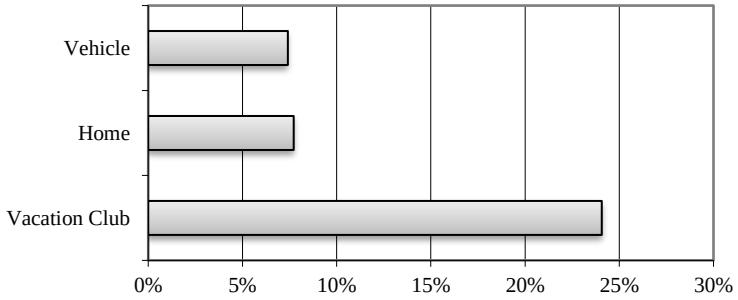

Fig. 6. Deletions to Concept to Increase Consideration among Detractors

A small number of individuals who rated the concept at 3 or lower identified additions to the concept that would contribute to increasing their consideration rating to 4 or higher. Figure 7 illustrates partial jet ownership and country club membership were the leading additions followed by home and vehicle insurance.

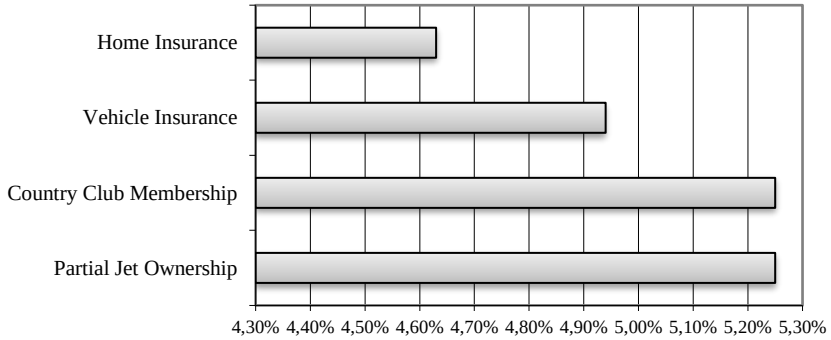

Fig. 7. Additions to Concept to Increase Consideration among Detractors

Conclusions

The original lifestyle bundle research identified a non-trivial level of interest in a home, vehicle and vacation club bundle. This paper identifies modifications to the bundle that would increase consumer interest among rejecters and supporters of the lifestyle bundle concept. While novelty was acknowledged as a reason for interest in the lifestyle bundle concept, it was clear that utility derived from convenience and lifestyle expression were the driving factors for many concept supporters. Those rejecting the concept also noted these attributes as influencing their opinions. Elimination of vacation club offer as part of the lifestyle bundle would have the greatest impact on increasing the rating of respondents who had rejected the concept. Adding home and vehicle insurance to the lifestyle bundle would have the greatest impact on enhancing the value proposition for those supporting the concept. Clearly, most concept evaluators, whether approving or disapproving, were able to view lifestyle as a product. That reality presents marketers with many interesting possibilities.

Future work on this topic should include applying conjoint testing protocols to enhanced lifestyle bundles based on the criteria identified in the “Results” section of this paper. Different consumer segments should be studied with alternative lifestyle bundles. Ultimately, specific brand and price bundles should be tested.

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POSSIBILITIES FOR FINANCIAL TECHNOLOGY SECTOR DEVELOPMENT AND ITS IMPACT ON BANKING SECTOR PROFITABILITY IN LITHUANIA

Greta Keliuotytė-Staniulėnienė[1], Gintarė Smolskytė[2]

[1]*Vilnius University, Vilnius, Lithuania, greta.keliuotyte-staniuleniene@evaf.vu.lt*

[2]*Vilnius University, Vilnius, Lithuania, g.smolskyte@gmail.com*

Abstract

Research purpose. The development of financial technology sector (*fintech*) poses a challenge for traditional financial institutions. Therefore, it is important to analyze not only how financial technologies can change, but also how the fintech sector affects banks and their profitability. The aim of the paper is to analyze the possibilities for the development of financial technology sector and quantitatively evaluate its impact on the banking sector's profitability in Lithuania.

Design / Methodology / Approach. After the analysis of academic literature and statistical data, the authors used expert evaluation method in order to identify development opportunities of *fintech* in Lithuania and correlation-regression analysis was applied to evaluate the impact of *fintech* on the profitability of the Lithuanian banking sector.

Findings. According to the results of expert assessment research, Lithuania possesses favorable conditions for fintech enterprises to enter the Lithuanian finance market; it is expected that this sector will continue to rapidly expand mostly in payments and banking business models. Correlation-regression analysis showed that fintech indicators has an effect on the banking sector's profitability but the effect in not very significant. The significance of the connection is lower because banking sector adapts technologies and is influenced by fintech from inside and outside the environment.

Originality / Value / Practical implications. The fintech sector in Lithuania is still new and so far very little researched. The outcomes of this research have expanded the scope of research of the Lithuanian *fintech* sector. The obtained results would be useful and relevant to (i) the government sector to manage risks and ensure stability in the financial sector; (ii) financial sector entities to monitor possible developments and prepare them accordingly; and (iii) banking sector to analyze the impact of technology and *fintech* entities on them and take strategic decisions in this regard.

Keywords: Financial technologies; Financial services; Banking sector; Profitability.

JEL codes: G23; Q55; G21.

Introduction

The role of financial technologies (hereinafter in the present paper referred to as FinTech) has assumed prominence in the 21st century with the accelerated development and broader applicability of information technologies. The increasing application of FinTech produces a positive effect on the finance sector by increasing the efficiency of the financial system and contributing to the growth of the national economy. In view of the rapidly growing possibilities to apply new technologies in the finance sector, increasing numbers of FinTechs, the new-type of business entities, started appearing around the world. Although conventional banks are considered to be the key players in the financial sector (Lévy-Bencheton, 2016), it is increasingly often argued that the growing FinTech sector seeks to take over the position of the principal financial services provider from traditional banks (Dabrowski, 2017).

The importance of financial technologies is obviously very important; however, the results of research in this area are not always unambiguous. DeYoung (2005), Kagan et al. (2005) have reported a wider applicability of technologies and the development of new channels for provision of financial services as adding to increase the profit margins of banks. On the other hand, there is evidence that in some countries technological changes can bring down the profits of banks (Tunay et al, 2015, Titko et al.,

2015), or will affect their performance to only a marginal extent. In response to emergence of FinTech, banks seek to improve the financial services they provide, and, in particular, in view of the new competitors emerging in the financial sector that can negatively affect the profitability of banks ((Lee et al., 2017, Dabrowski, 2017, Lévy-Bencheton, 2016). However, research efforts regarding the possibilities of how financial technologies will develop as well as on the FinTech entities operating in the market have been scarce (Titko et al., 2015, Levišauskaitė et al., 2004). Given the level of the subject being examined and in view of the development of the FinTech sector, it is becoming increasingly important to analyze the sector, and especially considering that the research literature has not yet produced any unambiguous and reliable conclusion on the impact of financial technologies upon the profitability of banks. Therefore the scientific problem of the study presented in the present paper – there is no unambiguous evidence of the potential of the financial technology sector in Lithuania and the impact it has on the profitability of the banking sector. In view of this situation, the main research question is whether there exists a favorable environment for FinTech development in Lithuania and whether the development of FinTech will have a significant impact on banking sector in the country.

Objective of the paper: The present paper seeks to analyze the possibilities for the development of financial technologies sector in Lithuania and produce a quantitative estimate of its impact upon the profitability of the banking sector.

Tasks of the paper: Carry out a theoretical analysis of the correlation between the financial technologies and the banking sector; develop a methodology for a study of the potential of financial technologies and the impact of such technologies on the profitability of the banking sector; identify the possibilities for the development of financial technologies in Lithuania; assess the quantitative aspect of the impact of financial technologies on the Lithuanian banking sector. An analysis of the research literature in the area, expert evaluation and correlation-regression analysis methods were used for analyzing the objectives of the paper.

Literature Review

In the narrow sense of the word, financial innovations are ordinarily associated with the development of new financial instruments (Frame, White, 2002); however, in the broad sense financial innovations can be understood as all new solutions and changes in the financial system, i.e. markets, institutions, instruments and regulation (Blach, 2011). Zovolokina et al. (2016) referred to FinTech as a "marriage" between the financial and the technology sectors, while Mouilleron (2017) saw FinTech as the use and the presence of technologies for the purpose of improving the financial sector. Arner et al. (2015) defined financial technologies as technologies used for the implementation of financial solutions. Zavolokina et al. (2016) identified a range of functions for the application of financial technologies: develop new services, upgrade the current services and thus reduce the prices, develop new business models and promote competition. Such identification of the functions allowed a conclusion that FinTech focuses upon the development of new services, processes and products designed to meet the existing and emerging needs of the consumers. Blach (2011) listed a number of functions performed by FinTech, such as increase of liquidity, enhancement of investment possibilities, increase in financing and borrowing opportunities, and enhancement of risk management efficiency. Glomber (2017) claimed that FinTech adaptation should expand financing and lending opportunities, increase independent investment opportunities, improve settlement methods, and facilitate access to and provision of insurance services. It then makes it appropriate to conclude that the functions of FinTech include upgrading of services, processes and products, and risk management under different FinTech operation models in which the functions are applied individually in order achieve the most efficient and best results.

Several key factors promoting the development of FinTech are the following: technologies, regulation, macroeconomic environment or the ecosystem (Frame et al. 2002, Schindler, 2016, Puchmann, 2016), as well as changing consumer behavior (Puchmann, 2016, Blach, 2011). Changes in consumer behavior pushes for the introduction of new financial instruments. Macroeconomic factors call financial institutions to protect themselves from the increased volatility of market parameters (Blach,

2011). The impact of regulatory factors has been mixed: an important factor is that regulation does not prevent any further development of FinTech, but rather protects the financial sector from possible risks. In some sources an "innovation spiral" has been referred to as a factor of FinTech, a process when appearing new innovation triggers an appearance of another innovation (Shindler, 2016).

FinTech targets innovations in financial services mostly promoted by new financial sector participants in the financial ecosystem mainly due to favorable conditions for entering the market. Such participants include FinTech companies that are focused on specific activity areas or include several electronic commerce areas and technology companies; however, conventional financial services institutions also seek to apply FinTech innovations and compete with new participants. The literature sources define the following areas of FinTech activities: payment, asset management, loans, pooled financing, insurance services, and capital market (Lee et al., 2017, Schindler, 2016, Dorfleitner et al., 2017, Glomber, 2017).

The introduction of new business models into the financial sector expands the financial sector and shows to what extent the sector has adapted to the changing needs of consumers by offering enhanced services and new financial solutions. However, the newly emerging business models are increasing the number of new entities in the financial sector, thus prominently increasing the competition for traditional players who enjoy the largest market share. Changes in the financial sector calls for an analysis of the potential development in the sector and whether traditional financial institutions will be replaced by new entrants.

The first innovations promoted by the development of technologies that marked the beginning of FinTech era were applied in the banking sector. As a result of such innovations, the traditional banking sector has undergone a number of changes ranging from the cheque system used, ATMs, electronic cards, electronic payments, online and mobile banking to digital banking (Wonglimpiyarat, 2017). Most of such changes were initiated by banks themselves (Puchmann, 2016), (Varga, 2017). The application of technologies in the banking sector only strengthened the banks and paved the way for a further expansion of their activities at the same time increasing their efficiency (Bratasanu, 2017), by promoting new services and products and also reducing the costs required for operations and processes (Levišauskaitė et al., 2004).

DeYoung (2005), Kagan et al. (2005), and Tunay et al. (2015) concluded that the introduction of internet banking increased the profitability of banks. However, DeYoung (2005) noted that for banks it will be more reasonable to maintain service provision in both traditional banks and the online space rather than fully relocating to the cyber space, as customer preferences for different channels will remain. Sadr (2013) observed that innovative payment services favorably affected the profitability of the banking sector. Bratasanu (2017) analyzed the impact of financial innovations to the income in the banking sector in general, rather than the impact produced by payment-focused technologies. Bratasanu concluded that financial technologies help banks to ensure better and stronger relations with their customers.

On the other hand, changes in the finance ecosystem have opened a path for new entities in the FinTech sector (Lévy-Bencheton, 2016) – FinTech companies now have become quite a challenge to banks. By using new technologies, FinTech companies offer more efficient ways and methods for already existing services and products (Navaretti et al., 2017) and thus compete with banks (Wonglimpiyarat, 2017). In terms of their operating models, FinTech companies are similar to banks and focus mainly on the lending and payment operations (Lévy-Bencheton, 2016, KPMG, 2017), which is the main area of operations and source of profit for banks. FinTech companies offer alternatives to the services provided by banks, making such services accessible (e.g. pooled financing). Thus, there is a growing perception that these new financial sector actors would become the principal competitors for the banks (Dermine, 2017, Lévy-Bencheton, 2016). Beaird (2017) claimed that the entry of FinTech companies into the market could reduce the revenues of banks by about 10-40 per cent by 2025. However, Sorkin (2016) sees two possible scenarios: first, the impact of FinTech on the banking sector will be negative in terms of performance, or, second, FinTech will have no significant impact as the banking system is too powerful and new players in the sector would not be able to

compete with it. Both Bratasanu (2017), and Lévy-Bencheton (2016) noted that banks and FinTech companies could not only compete but also cooperate in improving the systems of conventional banks.

Although the majority of the research papers on the topic of FinTech is theoretical, rather than empiric in nature (Blach, 2011, Arner et al., 2015, Vaškelaitis, 2010, Dorfleitner et al., 2017, Puschmann, 2016, Schindler, 2016, Walker, 2017, Kalmykova et al., 2015),they provide definitions of financial technologies, define the development stages and operating models, analyze the existing regulations and the impact of technologies, and emergence of risks; however, in view of the further development of the FinTech sector, other areas have also attracted the interest of researchers (Kagan et al., 2005; DeYoung, 2005; Cyree et al., 2009; Trivedi, 2015, Tunay et al., 2015; Yen, 2013, Heffernan et al., 2008; Buss et al., 2017; Bratasanu, 2017; Mwaura et al., 2016; Levišauskaitė, 2004; Vargas, 2008; Gimpel, 2015; Lee et., 2017; Mansilla-Fernandez, 2017), focusing more on the level of FinTech development of the country, the impact of the sector upon the national economy, the financial sector, or the possibilities of further development of the FinTech sector. For instance, Vargas (2008) found that banks employ financial technologies to a lesser extent than FinTech companies, but their role remains important and banks are likely to increase the use of financial technologies in the future. When studying the factors that impact the level of use of financial technologies, Mwaura et al. (2016) established significant links between the new technologies and price stability, and the variables of new products and technologies. When analyzing innovations in online banking area, Levišauskaitė (2004), DeYoung (2005), Tunay et al. (2015), Kagan et al. concluded that the FinTech technologies did have a positive effect upon banks. A study carried out by Trivedi (2015) demonstrated that the impact of the deployment of innovations and their potential to affect profitability is not completely clear, because such technologies affect both profitability and the stability of banks' operations. In the light of the above, it is important to analyze whether the FinTech sector significantly affects the financial sector.

Methodology

(1) As was noted by Vargas (2008), the information about the FinTech sector is quite complex to collect; therefore, interviews were defined as the most efficient method to assess the sector. This method for the purpose of a few studies in the area was used by a number of researchers, such as Gimpel (2015), Levišauskaitė (2004), PwC (2017), and Deloitte (2017). Another method applied for the purpose of the FinTech analysis is expert evaluation (Baležentis, Žalimaitė, 2011, Erman, 2017). The latter method requires special expert knowledge and specific professional expertise possessed by only a limited number of specialists. Expert evaluations may be used also in situations when the information is not sufficient (Rudzkienė et al., 2009). Thus, a study of the possibilities for the development of financial technologies sector in Lithuania was carried out using the expert evaluation method. The method is used to obtain and collect the information about the FinTech sector, the factors affecting it, likely problems and the prospects for the development of the sector in Lithuania.

Considering the fact that within the expert evaluation models there is a rapidly diminishing nonlinear link between the answers and the number of respondents, and the number of experts recommended in the literature (Libby, 1978, Cohen et al., 2000, Rudzkienė et al., 2009), the opinion of eight experts was analyzed for the purpose of this study. A number of criteria were referred to for the purpose of selecting the experts, such as position occupied (executive position in the company – development, projects, strategy manager, director); higher university education (Master's degree in areas related to business development, economics, finance and technology); and professional experience in financial technologies (more than 2 years). The questionnaire was drawn up based on the surveys of companies carried out by PwC and Deloitte for the purpose of assessment of FinTech potential on the global level, also by individual researchers (Frame et al., 2002, Gimpel, 2015). The questionnaire is made up of 15 questions: nine closed type and six open type questions (Table 1). Assessment of compatibility of expert opinions using the Kendall Concordance Coefficient (Podvezko et al., 2005, Rudzkienė et al., 2009).

Table 1. Expert evaluation questionnaire (Source: author's compilation)

Questions
K1. The sector that the FinTech you represent belongs to?
K2. Please evaluate the performance of the FinTech in each of the areas (rate three statements presented next to the sector at a scale 1 to 5, 1 being the lowest score, and 5 – the highest score) according to the results achieved and the attention currently dedicated to them). K3. Please evaluate the performance of the FinTech in each of the areas (rate three statements presented next to the sector at a scale 1 to 5, 1 being the lowest score, and 5 – the highest score) depending on the strategic objectives that the Company seeks to achieve within five years.
K4. Do you think the environment in Lithuania is conducive to the establishment and operation of FinTech companies? K5. Which reasons in your opinion make the environment in Lithuania conducive to appearance of FinTech companies? K6. To what extent in your opinion the regulatory environment in Lithuania is conducive to the establishment and operation of FinTech companies? K7. In which areas you discern regulatory deficiencies for innovations in FinTech?
K8. Which conditions in your opinion will to a largest extent affect the development of FinTech in the course of the next five years? K9. Which of the financial sector areas will be most triggered/ disturbed by FinTech companies (i.e., which are will be expanding most) in the course of the next five years?
K10. Which are the threats related to the FinTech growth in your sector?
K11. What are the opportunities related to the growth of FinTech growth in your sector?
K12. Do you work with conventional financial institutions (e.g. banks)? K13. What challenges do you usually face when you work with conventional financial institutions?
K14. Do you apply the 'blockchain' technology? K15. How do you apply the 'blockchain' technology, do you see any benefit in applying the blockchain' technology?

(2) For the purpose of assessing the impact of certain developments on the banking sector, researchers often use a correlation (Larionova et al., 2014, 2017, Jasevičienė et al., 2013, Biswas et al., 2018, Bikker, 2010) and regression analysis (Milič et al., 2017, Tunay et al., 2015). Furthermore, most frequently for analyzing the impact of financial technologies on banks, researchers use the correlation-regression analysis method (DeYoung, 2005, Mwaura et al., 2016, Mustapha, 2015, Mansilla-Fernandez, 2017, Tunay et al., 2015, Shah et al., 2014). For the purpose of the present paper, the impact of the FinTech sector on the banking sector in Lithuania was assessed using the correlation and multidimensional linear regression analysis.

Table 2. FinTech indicators used in research (Source: author's compilation)

Indicator	Research
R&D costs in the financial sector	Heffernan et al. (2012), Ekpu (2015).
Market structure (number of FinTech companies)	Mansilla-Fernandez (2017), Pejkovska (2018), Bikker (2010).
Investment in FinTech	Bakker (2015), Mansilla-Fernandez (2017).
Payment in non-cash	Mansilla-Fernandez (2017), Pejkovska, (2018), Cyree et al. (2009), Ekpu (2015).
Number of payment cards	DeYoung (2005), Ekpu (2015), Titko et al. (2015).
Total online banking users	Tunay et al. (2015), Kagan et al. (2005), Cyree et al. (2009), Ekpu (2015), Mustapha (2018), Titko et al. (2015).
Total mobile banking users	Kagan et al. (2005), Cyree et al. (2009), Ekpu (2015), Mustapha (2018).
Total payment card readers	Ekpu (2015), Mustapha (2018), Titko et al. (2015).

An overview of the research in the area concerned (DeYoung, 2005, Cyree et al., 2009, Bikker, 2010, Yen, 2013, Shah et al., 2014, Trivedi, 2015, Tunay et al., 2015. Kagan et al., 2005, Bektas, 2014)

concluded that the key indicators used to evaluate the profitability in the banking sector are return on equity (ROE), return on assets (ROA) and the net interest margin (NIM). Thus ROA and ROE were selected as dependent indicators of the study and the efficiency of management of assets and equity, and NIM (allows assessing the profitability of one of the main activities, i.e., granting of loans) was rated.

For the purpose of selecting the independent variables, some research papers presenting quantitative FinTech indicators (Table 2) were analyzed. With regard to Table 2 and the data accessibility in the case of Lithuania, certain indicators were used to assess the impact of the FinTech on the banking sector.

Since the multidimensional linear regression model is most suitable for projecting when all the variables strongly correlate with the dependent variable, and do not correlate among themselves (Janilionis, 2011), for the purpose of the study the regression model is formed only with those independent variables that are statistically significantly related to the dependent variables. In the light of the arguments for selecting dependent and independent variables the authors produced the following multidimensional linear regression model:

$$Per_t = \alpha_{it} + \beta_1 FinTech + \beta_2 Card + \beta_3 PosT + \beta_4 Intbank + \beta_5 Innov + \beta_6 Mobbank + \beta_7 TUI + \beta_8 Nonpmnt + \varepsilon_{it} \quad (1)$$

where:

Peri – banking sector's ROA, ROE and NIM;
FinTech – total number of FinTech companies;
Card – total number of bank cards;
PosT – total number of bank card readers;
Intbank – total number online banking users;
Innov – total expenses for innovations;
Mobbank – total number of mobile banking users;
TUI – total investment in the financial sector;
Nonpmnt – non-cash money payment value.

The survey using the interview method was carried out in April and May 2018 and the correlation-regression analysis was carried out using the data of 2010–2017.

Results

In Lithuania, the FinTech sector is clearly rapidly developing; nevertheless, it is still quite young and its growth specifically accelerated in 2015 (Fig. 1), when the number of FinTech companies in the country doubled by 2017, i.e. out of total 53 licenses issued, 35 licenses were issued in the course of the past several years.

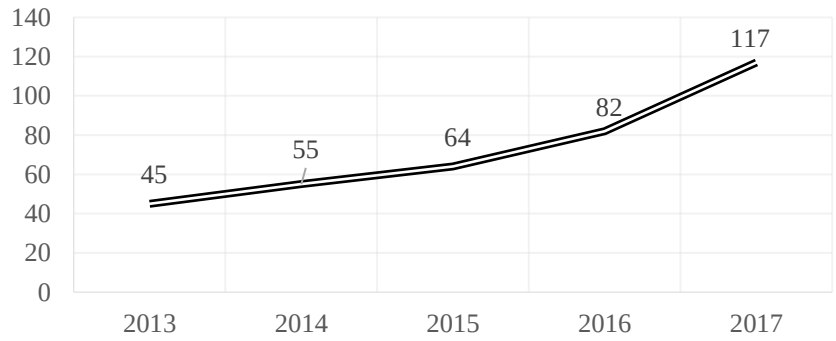

Fig. 1. Total FinTech companies in Lithuania, **2013–2017 (**Source: Invest Lietuva, 2017)

Although ensuring the development of financial technologies contributes to the creation of new jobs, attracts foreign direct investment, increases the rating of Lithuania as a highly innovative country

(Invest Lietuva, 2018), thereby increasing the competitiveness of the country, , however, for banks, which are entities accounting for the largest share of the Lithuanian financial sector, this may create a threat of losing the market share they hold (Powell, 2017, Wonglimpiyarat, 2017).

(1) When analyzing the possibilities for FinTech development in Lithuania, the primary task for the authors was to determine how the performance of FinTech companies is assessed in the areas of customer management, value enhancement, internal operations management, data management and change management, and the prospects of the activity in the course of the next five-year period. After estimation of the mean response of the experts in individual areas, it was concluded that the weakest area of activity is change management. The most prominent changes are expected to take place in the areas of customer management, digital value enhancement and change management area. Among the areas to which FinTech companies intend to dedicate less attention in the course of the coming five years is data management and value enhancement. To assess the compatibility of expert opinions on these issues, the calculated concordance coefficients were equal to 1.00 and 0.997, respectively, and as the estimated value of χ^2 exceeded the critical value, it was concluded that expert assessments related to FinTech business areas currently and in the future have been aligned and are similar.

The survey of the conditions for the establishment and operation of FinTech companies in Lithuania showed that all experts assessed the environment in Lithuania as conducive to the formation of such companies – rating it 5 out of 8 as conducive rather than non-conducive (3 out of 8); the main reasons for such ratings were highly competent employees always seeking to develop professionally, quality and price ratio, well-developed infrastructure and business conditions. The experts also noted that the public sector in Lithuania seeks to support companies by adapting to the pace of technology-driven companies for the purpose of providing the required services to businesses. On the other hand, the experts also pointed out several significant deficiencies in a number of areas of the regulatory apparatus, such as procedures and legislation to be enforced in order to stop illegal generation of income, e-money/crypto currencies, new business models, and digital identification.

An overview of the factors affecting the development of the FinTech sector in Lithuania concluded that in the course of the next five years, the major factors affecting the development of the FinTech sector will be the developing technologies and consumer conduct, in addition to another nonetheless important factor of changing financial ecosystem and regulation. The expert evaluation also identified several key threats arising from the development of FinTech: loss of a part of market, threat to information protection and privacy, or some risks arising from regulatory changes.

As regards possible impact on the different areas of the financial sector, experts claimed that in the course of next five years, the largest impact will be produced in the banking sector (6 experts), payment operations (7 experts) and crediting area (3 experts). Since FinTech companies essentially focus on provision of more modern, faster and more affordable daily services, any related areas will be most notably affected. A global survey on FinTech impact carried out by PwC (2017) noted that among the areas that will be most significantly affected in the course of the coming five years are banking and payment sectors, and both on the global scale and in Lithuania the trends are very similar.

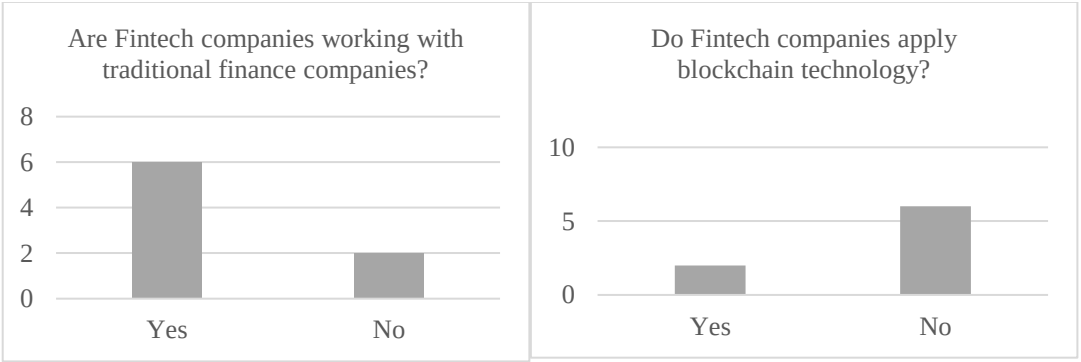

Fig. 2. Cooperation of Lithuanian FinTech companies with conventional financial institutions and the application of the 'blockchain' technology (Source: author's compilation)

Another objective pursued as part of the expert evaluation was to identify some initial insights regarding the interface between the banking and the FinTech sectors. The results of the survey showed that the largest part of the FinTech sector cooperates rather than competes with the conventional financial institutions (Fig. 2); nevertheless, when cooperating with banks, significant challenges arise because of the differences in the applied business models, operation processes, required financial investment and the incompatibility of the IT systems. Cooperation between financial institutions and FinTech companies has been also confirmed by the data of the Lithuanian Department of Statistics (Statistics Lithuania); in 2014–2016, in the area of financial services and insurance activities, as many as 61.7 per cent of the companies cooperated with their partners.

An assessment of the application of "blockchain" technologies showed that so far only a small part of the FinTech sector companies in Lithuania apply the technique (Fig.2); however, undoubtedly there is a clearly discernible potential for the technology to by applied in and benefit a number of areas, such as electronic settlement infrastructure, securities swaps management of digital identity, compliance, audit or loan syndication.

(2) The survey of the impact of financial technologies upon the profitability of Lithuanian banks primarily focused upon the link between the FinTech indicators and the ROA, ROE and NIM of the banking sector. A table of the link between the significance of the variables was drawn up with regard to the computed correlation coefficients and the significance levels (Table 3). It appeared that the links of not a single FinTech indicator is statistically significant for the ROE ratio. At the same time a negative relation between negative ROA and the non-cash money payments was identified; But a statistically significant correlation between NIM and internet banking, mobile banking and the number of bank card readers was observed.

Table 3. Statistical significance of the correlation between the FinTech indicator and the profitability of the banking sector (Source: author's compilation)

***p*<0.05**	**ROA**	**ROE**	**NIM**		**p<0,1**	**ROA**	**ROE**	**NIM**
FINTECH	s.n.	s.n.	s.n.		FINTECH	s.n.	s.n.	s.n.
TUI	s.n.	s.n.	s.n.		TUI	s.n.	s.n.	r.n.
INNOV	s.n.	s.n.	s.n.		INNOV	s.n.	s.n.	s.n.
NONPMNT	r.n.	s.n.	s.n.		NONPMNT	r.n.	r.n.	s.n.
INTBANK	s.n.	s.n.	r.t.		INTBANK	s.n.	s.n.	r.t.
MOBBANK	s.n.	s.n.	r.t.		MOBBANK	r.t.	s.n.	r.t.
CARD	s.n.	s.n.	s.n.		CARD	s.n.	r.n.	r.n.
POST	s.n.	s.n.	r.t.		POST	s.n.	s.n.	r.t.
s.n. – statistically insignificant, r.n. – significant negative, r.t. – significant positive								

Authors in the area (Dallal, 2012) have been using different levels of significance depending on the need (from 0.01 to 0.1). When assessing the impact at a significance level 0.1, more significant links between ROE and FinTech indicators were identified. The significant negative correlation between ROE and the non-cash money operations values and the card number indicators, and the significant negative correlation between ROA and the non-cash money operations, showed that competition in the area of settlement and payment negatively affects the profitability of banks. In five out of eight FinTech companies, the link with NIM appeared statistically significant.

Table 4. Regression models for ROA, ROE and NIM indicators (Source: author's compilation)

	ROA model	**ROE model**	**NIM model**
Determination coefficient	0.896	0.843	0.775
Adj. determination coefficient	0.803	0.711	0.600
Durbin-Watson coefficient	2.430	2.415	2.194
Sig.	0.068	0.141	0.256

Further, regression models were constructed for each of the dependent variables, using the non-cash money payment, mobile banking and payment card number ratios (Table 4). It is obvious that the changes in the financial technologies sector best explain the movements in ROA and ROE, because the indicators defining the characteristics of the regression model constructed for the ratios are most significant. The determination coefficient for all models is sufficiently high, thus in all models the changes in such financial technologies explain the movement in the profitability ratios. Concerning the level of significance of the most significant ROA and ROE ratios, they are significant only with a 90 per cent significance level, i.e. $p<0.1$. The Durbin-Watson test shows that there is no significant auto-correlation problem.

From the results obtained by correlation-regression analysis, several key insights were identified. First of all, in two out of three models, the FinTech indicator impact upon the performance of the banking sector is statistically significant, which allows a conclusion that technologies in the payment area produce significant impact upon the profitability indicators of the banking sector.

Second, the analysis of correlation showed that there are both positive and negative correlations between the FinTech indicators and the banking sector profitability ratios. This suggests that the costs of banks allocated for deployment of technologies reduce their profitability due to increased expenses; in selected areas, banks are less innovative than FinTech companies.

And finally, having concluded a strong or medium significant link between the number of payment cards, non-cash money payments, mobile banking and the profitability ratios of banks, and within the regression models, the ratio of payments accurately describes the movement in the bank's profitability. So it may be concluded that the payment technologies mostly affect the banking sector. That is consistent with the conclusions of Tunay et al. (2015), DeYoung (2005) and Wonglimpiyarat (2017), who have reported a significant impact on the profit margins of banks produced by online banking, mobile banking and the operations performed on such platforms. Thus the models that have been constructed for the purpose of the study are best suitable for examining the impact of the related technologies on the profitability of the banking sector.

Conclusions

There is no unanimous opinion in the research literature concluding how FinTech actually affects the profitability of the banking sector. On the one hand, the FinTech may affect the profitability of banks negatively because of an easier adaptation to the new technologies, and forming of new operating models in the financial sector. On the other hand, some other studies suggested that FinTech does not actually have significant impact upon the profitability of the banking sector, as banks are capable of adapting to new technologies also due to the fairly obvious cooperation opportunities between the two sectors.

The results of the completed expert evaluation made it possible to identify the following factors potentially supporting the development of FinTech in Lithuania: expand the customer base with a view not to lose the market share currently held, apply technologies to improve products and services, apply the data analysis at a larger sale for ensuring operational efficiency, apply other technologies, such as 'blockchain', cooperate with conventional financial institutions, thus reducing competition and seeking to retain the market share currently held.

Assessment of Lithuanian environment showed that Lithuanian economic environment is assessed as favorable for appearance of new FinTech entities, primarily due to highly competent employees, well-developed infrastructure, and conditions favorable for business development. Moreover, it can be well expected that the impact of the development of FinTech will be most prominently manifested in the payment and the banking sector. On the other hand, FinTech companies clearly tend to continue cooperating with the banking sector, rather than competing with it.

After the evaluation of the impact of Fintech on profitability of banking sector, a significant link between the profitability indicators of the banking sector and the innovative payment services was revealed. It can be concluded that the profitability of the banking sector is significantly affected by online and mobile banking, and the operations performed on such platforms.

Finally, a quantitative assessment of the impact of financial technologies on the Lithuanian banking sector showed that in Lithuania FinTech companies do not cause any significant competition, as no significant negative link with the number of new FinTech entities has been established.

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SUBJECTIVE WELL-BEING AND JOB TYPES: NEW EVIDENCE FROM CHINA

Meng Yan[1], Kai Shi[2]

[1]*University of New Hampshire, Durham, USA, my1019@wildcats.unh.edu*

[2]*Northeast Normal University, Changchun, China, shik142@nenu.edu.cn*

Abstract

Research purpose. The job types might be potential determinants of subjective well-being (SWB), which is seldom investigated in the current literature. This article examines this relationship by collecting data from the Chinese Household Income Project in 2013 to explore this relationship.

Approach. In line with existing studies on SWB, we apply the ordered probit model and further estimate the effects of different job types on SWB.

Findings. This article demonstrates that individuals employed by Sino-foreign joint enterprises tend to have the lowest SWB. On the contrary, those employed by the public sector and private enterprises are more likely to acquire higher satisfaction.

Practical implications. To conclude, job types are closely linked with SWB and job types should be incorporated as a crucial factor when further analysing the SWB.

Keywords: Subjective well-being; Job types; Chinese household income project; Ordered Probit Model.

JEL codes: I31; J28.

Introduction

Subjective well-being (hereafter SWB) refers to self-reported happiness, which is consistent with the concept of utility in economics. In modern economic theory, utility plays a pivotal role in our research. For example, a representative agent always faces maximising his or her utility function under resource restrictions. SWB initially stems from the psychological area, and economists use this indicator as a measurement of individual satisfaction. By measuring the magnitude of SWB and identifying the factors that influence SWB, policymakers can clearly understand the effect of a specified economic policy on social welfare.

Which factor influences SWB? This question has been widely debated by economists, and the existing literature mainly focuses on two factors that affect SWB. The first factor is income or relative income. Headey and Wooden (2004) pointed out that household income had significant but little effect on SWB by using HILDA (The Household, Income and Labour Dynamics in Australia) survey data from Australia. Guven and Sørensen (2012) used the U.S. General Social Survey from 1972 to 2004 and concluded that high income was correlated with the higher level of SWB; however, high reference group income was negatively related to SWB. Goerke and Pannenberg (2015) used the German Socio-Economic Panel (SOEP) data to explore the evidence between income comparisons and SWB. They concluded that there were negative correlations between comparison intensity and SWB for colleagues or people in the same occupation and friends. Antinyan (2016) also studied the relationship between SWB and reference group income by using data from three republics of the South Caucasus. The conclusion verified that SWB went down when reference group members were richer than they were and SWB was enhanced when reference group members were poorer.

The second factor to explain SWB is consumption. Ahuvia (2002) studied the impact of different attitudes toward consumption at the micro- and macrolevel on SWB. Luttmer (2005) concluded that high levels of SWB come from their consumption under the framework of the utility function. Hudders and Pandelaere (2012) measured the impact of luxury consumption on SWB by comparing materialistic and less materialistic consumers. Iyer and Muncy (2009) further studied the effect of

attitude toward consumption on SWB and indicated that micro attitude was always positively related to a consumer's SWB and macro attitude was always negatively related to SWB.

Although income and consumption are two important determinants of SWB, the bulk of literature also study other factors that may influence SWB. In a recent article, Fujiwara and Lawton (2016) pointed out there were not any empirical research to discuss the relationship between employment in creative occupations and SBW directly. They used the UK's Annual Population Survey to empirically analyse whether creative occupations are associated with a higher level of SWB and concluded that creative occupations will result in higher SWB than ordinary occupations. Indeed, existing literature seldom explores the relationship between SWB and different job types, although some research may incorporate job variables in their regression models. So, the relationship between job types and SWB should be emphasised, and job types perhaps are important potential factors to interpret SWB.

The marginal contributions in this article are twofold. First, the data on SWB are difficult to collect in emerging countries because of the costly survey plan. Therefore, this article enriches the literature on determinants of SWB in developing countries. Second, this article complements to some study (e.g. Fujiwara & Lawton, 2016) by analysing the potential relationship between occupation and SWB through a detailed separation of job types.

The SWB collected from questionnaires is a discrete and ordered variable, therefore, traditional panel data regression and cross-section regression (e.g. Cai & Park, 2016; Goerke & Pannenberg, 2015) are inappropriate in investigating the marginal effects of different job types on SWB because the marginal effects are not constant because of discrete dependent variable. Therefore, current studies (such as Eggers *et al.*, 2006; Ye & Lin, 2015) turn to rest on the ordered probit model. In a similar manner, we also adopt the ordered probit model to assess the marginal effects of different job types on SWB. Our article indicates that individuals employed by Sino-foreign joint enterprises tend to have the lowest SWB. On the contrary, those employed by the public sector and private enterprises are more likely to acquire higher satisfaction.

The remainder of this article is organised as follows. Section 2 discusses data source and variables choice, especially distinct conceptions to define dependent variables – SWB. Section 3 presents the regression model and analyses empirical results. Section 4 concludes.

Data and Variables

There are two core variables in our article: job types and SWB, from the questionnaire used by the Chinese Household Income Project (CHIP) in 2013, which is the latest survey conducted by the CHIP. According to the National Bureau of Statistics in China, the structure of employment keeps constant since 2012. Therefore, to some extent, we can use the data surveyed by the CHIP in 2013 to characterise the relationship between SWB and job types in the recent years.

Then we identify that SWB has five different levels and define the numerical values of SWB as follows: very happy = 5, happy = 4, so-so = 3, not very happy = 2 and not happy at all = 1. According to the survey questionnaire, the employment types of jobs can be divided into eight categories, which are government and party agencies = 1, public institution = 2, solely state-owned/state-holding enterprises = 3, collective enterprises = 4, Sino-foreign joint venture/solely foreign-owned enterprises = 5, individual enterprises = 6, private enterprises = 7 and others. Other job types will be regarded as the baseline group; as a result, when we estimate the ordered probit model, we will drop this job type and only focus on other seven job types.

According to Fujiwara and Campbell (2011), the control variables incorporate age (age in years), gender (a dummy variable, 1 if male, 0 if female), marital status (dummy variable, 1 if married, 0 if other marital status), ethnicity (dummy variable, 1 if Han nationality, 0 if others), disability (1 if disabled, 0 if others), years of education (the corresponding years according to the level of education completed) and income (total income in 2013).

Before estimating our regression model, we should have a detailed discussion on the choice of subject well-being by comparing with the existing literature. Fujiwara and Lawton (2016) made an extension

of the concept of SWB; they not only considered the traditional concept of SWB, for example, life satisfaction and happiness, but also measured the value of worthwhileness and anxiety. Besides, they defined the scale of these indicators from 0 to 10, where 0 represents nothing was felt. Cai and Park (2016) used global life satisfaction as a possible measure of SWB, which is defined as the expected lifetime utility (the sum of current and future discounted utility). They also pointed out five possible values to represent SWB, in which 1 denotes very dissatisfied, 2 denotes dissatisfied, 3 denotes just so-so, 4 denotes satisfied and 5 denotes very satisfied. So, the value range of SWB adopted by Cai and Park (2016) is very similar to the data on SWB used in this article. As we mentioned before, an individual is hard to define his/her happiness between 4 and 5 when the value ranges from 1 to 10 but is easier to define his/her happiness between happy and just so-so when the value ranges from 1 to 5. So, it is reasonable to use the survey result of SWB based on 5 categories rather than based on 10 categories, although 10 categories may provide more variation of the dependent variable.

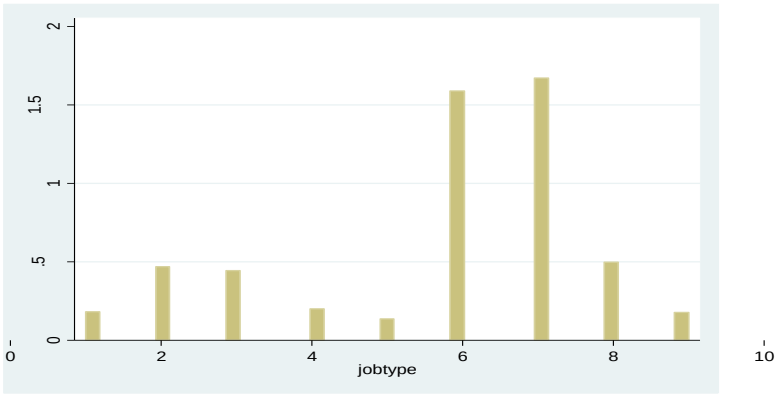

Fig. 1. Histogram of Job Types (Source: Author's Calculation)

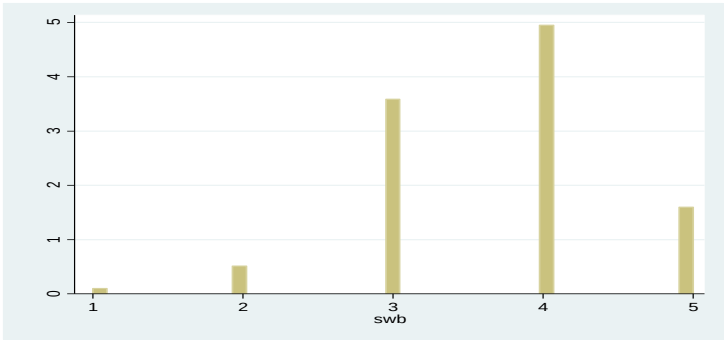

Fig. 2. Histogram of SWB (Source: Author's Calculation)

Figures 1 and 2 present the distributions of SWB and job types. From these two figures, we can find out that the value range of SWB for most observations is between 3 and 4, that is, from so-so to happy; in the meanwhile, the occupations dominated the highest percentage in our sample are individual enterprises (=6) and private enterprises (=7). Actually, with the transition from the planned economy system to market economy system in China, there is a significant decline in the number of labours employed by the state-owned enterprise when compared with the past decades.

Table 1 reports the descriptive statistics of SWB and controlling variables used in our regression model. After deleting missing values, the number of total observations in our sample is 22,967 (following the data instruction from the CHIP, they have already removed the unreliable observation). The percentage of residents employed by individual enterprises and private enterprises are 29.6% and 31.1%, respectively; in other words, more than 60% labours work in private sector in our sample, which is consistent with Chinese market economy reform since 1978. Table 1 further indicates the

percentages of employees in government and party agencies and Sino-foreign joint venture/solely foreign-owned enterprises are relatively low.

Table 1. Descriptive Statistics (Source: Author's calculation)

Variables	Description	Mean	S.D.
SWB	Subjective well-being	3.780	0.813
AGE	Age of residents	40.592	11.806
MALE	=1 if male	0.608	0.488
MARITAL	=1 if married	0.825	0.380
ETHNICITY	=1 if HAN nationality	0.960	0.197
DISABILITY	=1 if disabled	0.021	0.142
EDUC	Years of education	9.887	3.385
INCOME	Income in 2013 (10,000 Yuan)	6.063	5.437
GOV	Government and party agencies	0.034	0.181
PUBLIC	Public institution	0.087	0.283
SENTER	Solely state-owned/state-holding enterprises	0.083	0.275
CENTER	Collective enterprises	0.038	0.190
SFENTER	Sino-foreign joint/solely foreign-owned enterprises	0.025	0.158
IENTER	Individual enterprises	0.296	0.456
PENTER	Private enterprises	0.311	0.463

Note: The sample size of data is 22,967. S.D. is standard deviation.

Empirical Results

In line with previous studies (Litchfield *et al*., 2012; Ye & Lin, 2015) on SWB, the ordered probit model is specified as follows:

$$SWB_i = X'\beta + Z'\delta + \varepsilon_i \tag{1}$$

where X represents seven different job types described in the preceding section and Z represents controlling variables, which include age, gender, marital status, ethnicity, disability, years of education and income. We assume ε_i is a standard normally distributed error term and the accumulative function of ε_i is denoted as $F(\cdot)$. If SWB_i^* is latent or unobservable variable, then observed SWB_i is determined from SWB_i^* using the following rule:

$$SWB_i = \begin{cases} 1 & if \quad SWB_i^* \le \gamma_1 \\ 2 & if \quad \gamma_1 < SWB_i^* \le \gamma_2 \\ 3 & if \quad \gamma_2 < SWB_i^* \le \gamma_3 \\ 4 & if \quad \gamma_3 < SWB_i^* \le \gamma_4 \\ 5 & if \quad \gamma_4 < SWB_i^* \le \gamma_5 \end{cases} \tag{2}$$

where values 1, 2, 3, 4 and 5 are threshold values, denoted as $SWB_i = j$ when $\gamma_{j-1} < SWB_i^* \le \gamma_j$. The cutting points γ are estimated along with model coefficients through maximum likelihood estimation (MLE). The maximise log likelihood function is listed as follows:

$$logL(\beta, \gamma) = \sum_{i=1}^{N} \sum_{j=1}^{5} \log(P(SWB_i = \mathrm{j}|X_i, Z_i, \beta, \delta, \gamma)) \cdot I(SWB_i = \mathrm{j}) \tag{3}$$

where $P(SWB_i = \mathrm{j}|X_i, Z_i, \beta, \delta, \gamma)$ represents the probabilities of observing each value of SWB and I (.) is an indicator function that takes the value 1 if I ($SWB_i = \mathrm{j}$) is true and 0 if the I ($SWB_i = \mathrm{j}$) is false. In the ordered probit model, the marginal effects will give the effect of a change in one of the

variables on the probability of each ordered category appearing dependent on given values of covariates as indicated by their parameter estimates. The marginal effect is expressed as

$$ME = \frac{\partial \Pr(SWB=j)}{\partial x} = [F'(\gamma_{j-1} - X'\beta - Z'\delta) - F'(\gamma_j - X'\beta - Z'\delta)]\beta \quad (4)$$

Table 2 reports the estimated coefficients by ordered probit model and Ordinary Least Squares (OLS) model. Table 3 further reports the marginal effects, which represent the probability of changes in the dependent variables when explanatory variables change.

We initially focus on the sign and magnitude of estimated coefficients from Table 2 and then analyse marginal effects in Table 3. In Table 2, except the coefficient of SFENTER (−0.010), all the other estimated coefficients of different job types are positive, in which the coefficients of GOV, PUBLIC and SENTER are much larger than other job types. This means individuals employed by Sino-foreign joint venture/solely foreign-owned enterprises tend to have the lowest SWB; on the contrary, those employed by the government, public institute, and state-holding enterprises are more likely to acquire higher satisfaction. Working in Sino-foreign joint venture/solely foreign-owned enterprises will bear more pressure than working in other sectors because employees working in such area not only face higher entrance criterion (such as master multiple languages, higher education degree) but also face stricter performance pressure and a relatively lower sense of belonging. Even though employees make more money in Sino-foreign joint venture/solely foreign-owned enterprises, this may not compensate for their payouts and result in lower SWB.

Table 2. Regression Results: Subjective Well-being and Jobs Types (Source: Author's Calculation)

Independent	**Ordered Probit**		**OLS**	
Variables	Coefficient	p-Value	Coefficient	p-Value
Age	**0.002****	0.038	**0.001****	0.03
Male	**−0.026***	0.073	**−0.019***	0.08
Marital	**0.051****	0.016	**0.038****	0.02
Ethnicity	**0.158*****	0.000	**0.118*****	0.00
Disability	0.055	0.270	0.044	0.24
Educ	**0.011*****	0.000	**0.008*****	0.00
Income	**0.003****	0.042	**0.002***	0.06
Gov	**0.094****	0.036	**0.066****	0.05
Public	**0.068****	0.041	**0.504****	0.04
Senter	**0.087*****	0.008	**0.062***	0.01
Center	0.068	0.107	0.056*	0.08
Sfenter	−0.010	0.832	−0.007	0.86
Ienter	0.032	0.181	0.023	0.19
Penter	**0.040***	0.092	**0.030***	0.10
Likelihood ratio	90.86***	0.00		
Log likelihood	−27,404.67			

Note: *** denotes statistical significance at 1%, ** denotes significance at 5%, * denotes significance at the 10%.

Given the Chinese unique economic structure, we regard the government institutes, public institutes and state-owned enterprises as the public sector. Hence, individuals employed by the public sector will gain more satisfaction. The possible reasons can be further interpreted from two perspectives. First, the working pressure in the public sector is relatively smaller than that in other enterprises, namely, employees will not have performance requirements. Besides, they do not need to worry about unemployment once they find a job in public sector in China; in the meanwhile, they can enjoy the best social security and implicit subsidy provided by the government. This is the main reason to explain why employed by the public sector will have higher SWB. Second, as we mentioned before, working in the public industry means higher political status, which accords with the traditional official rank standard of China. Therefore, a job type with higher social status might be more attractive than

the job with a higher wage. In particular, the conclusion obtained here is also consistent with that of Goerke and Pannenberg (2015); their empirical results also showed that employed by the public sector is possible to have higher happiness, although they used the dataset from Germany.

Another conclusion from Table 2 is that the estimated coefficient of PENTER is also positive and statistically significant, which suggests individuals employed by private enterprises also exhibit higher SWB. Since the mid-1990s, the Chinese government began to reform the development pattern of industries, primarily through complex forces of restriction, competition and privatisation to reshape Chinese industry (Naughton, 2007). Besides, the Chinese government also started to provide further legitimacy and legal protection to the private enterprise from the late 1990s. With the establishment of clarifying property right, the profits of private enterprise gradually increased, and the income level of workers employed by private enterprise also begin to rise. In the recent years, the percentage of private enterprise accounting for GDP (gross domestic product) in China has been more than 60%; therefore, the employees in private enterprises will get better treatment, such as salary and working environment; this may illustrate why the individuals who work in private enterprise will have positive estimated coefficients in SWB regression equation.

Table 3. Marginal Effects of Ordered Probit Model (Source: Author's calculation)

Variables	Very happy SWB = 5	Happy SWB = 4	So-so SWB = 3	Not very happy SWB = 2	Not happy at all SWB = 1
Age	**0.0004****	**0.0002****	**−0.0004****	**−0.0001****	**−0.00004****
	(0.038)	(0.038)	(0.038)	(0.038)	(0.039)
Male	**−0.006***	**−0.004***	**0.007***	**0.002***	**0.001***
	(0.074)	(0.071)	(0.073)	(0.072)	(0.073)
Marital	**0.012****	**0.008****	**−0.014****	**−0.005****	**−0.001****
	(0.015)	(0.021)	(0.016)	(0.019)	(0.022)
Ethnicity	**0.034*****	**0.028*****	**−0.041*****	**−0.016*****	**−0.005*****
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Disability	0.013	0.008	−0.015	−0.005	−0.001
	(0.283)	(0.237)	(0.273)	(0.252)	(0.241)
Educ	**0.002*****	**0.002*****	**−0.003*****	**−0.001*****	**−0.000*****
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Income	**0.001****	**0.000****	**−0.001****	**−0.0002****	**−0.000****
	(0.042)	(0.042)	(0.042)	(0.042)	(0.044)
Gov	**0.023****	**0.013****	**−0.026****	**−0.007****	**−0.002****
	(0.044)	(0.017)	(0.037)	(0.025)	(0.021)
Public	**0.016****	**0.010****	**−0.018****	**−0.006****	**−0.002****
	(0.046)	(0.028)	(0.042)	(0.033)	(0.030)
Senter	**0.209****	**0.012*****	**−0.024*****	**−0.007*****	**−0.002*****
	(0.010)	(0.003)	(0.008)	(0.005)	(0.004)
Center	0.016	**0.010***	−0.018	**−0.006***	**−0.002***
	(0.119)	(0.080)	(0.109)	(0.092)	(0.084)
Sfenter	−0.002	−0.002	0.003	0.001	0.000
	(0.831)	(0.834)	(0.832)	(0.833)	(0.834)
Ienter	0.007	0.005	−0.009	−0.002	−0.001
	(0.184)	(0.174)	(0.181)	(0.177)	(0.175)
Penter	**0.009***	**0.006***	**−0.011***	**−0.004***	**−0.001***
	(0.094)	(0.086)	(0.092)	(0.089)	(0.088)

Note: The marginal effects calculated here are overall average marginal effects at every point. p-Value is presented in the parenthesis. *** denotes statistical significance at 1%, ** denotes significance at 5%, * denotes significance at the 10%.

Next, we turn to interpret the estimated marginal effects in Table 3 and mainly discuss the impacts of different jobs on SWB when SWB takes the value of 5 (very happy). The estimated effects of GOV is 0.0223, which means compared with other job types, the individuals employed by the government and

party agencies increase the probability of reporting very happy by 2.3 percentage point. For individuals who work in public institution, state-owned enterprises, and private enterprises, they also increase the chances of reporting very happy compared with other job types. The exception here is SFENTER, that is, individuals employed by Sino-foreign joint enterprise; they decrease the likelihood of reporting very happy by 0.2 percentage point, although the estimated marginal effect here is statistically insignificant. The marginal effects further support our previous analysis, that is, for individuals who choose to work in public sector and private enterprises, they are more likely to have higher SWB, but those employed by Sino-foreign enterprise tend to report lower satisfaction.

Conclusions

Considering job types may be the potential determinants of SWB, this article examines this relationship by using data from the Chinese Household Income Project in 2013. In common with much of existing studies on SWB, this article uses the ordered probit model to estimate the effect of different job types on SWB. This article demonstrates that individuals employed by Sino-foreign joint enterprises tend to have the lowest SWB. On the contrary, those employed by the public sector and private enterprises are more likely to acquire higher satisfaction. This article concludes that job types are closely linked with SWB and job types should be incorporated as a crucial factor when further analysing the SWB.

The policy implications here are obvious. From the perspective of social equality, the government can compensate those employed by Sino-foreign joint enterprises to increase their SWB. For example, the government can implement tariff exemption or export subsidy for Sino-foreign joint enterprises to improve their profit and increase the employee's income level indirectly.

Besides, the relationship between job types and SWB in emerging countries will be more significant than in developed countries. One possible reason is, in emerging countries, the salary and working environment of most workers employed by the enterprise (private or individual) are worse than that of those working in the public sector. For future studies, we can consider the quasi-experimental analytical methods, such as difference-in-difference and regression discontinuity, to evaluate the change of policy aimed at improving workers' welfare in transition economy countries and have a better understanding of how different types of jobs can affect SWB in the long run (Fujiwara & Lawton, 2016).

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LINEAR MODEL FOR BRAND PORTFOLIO OPTIMIZATION

Pavol Kral[1], Katarina Janoskova[2], Pavol Durana[3]

[1]*University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitná 1, 010 26 Žilina, Slovakia, E-mail:* pavol.kral@fpedas.uniza.sk

[2] *University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitná 1, 010 26 Žilina, Slovakia, E-mail:* katarina.janoskova@fpedas.uniza.sk

[3] *University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitná 1, 010 26 Žilina, Slovakia, E-mail:* pavol.durana@fpedas.uniza.sk

Abstract

Research purpose. The aim of the paper is to create a model that allows building an optimal brand portfolio, allowing an organisation to achieve its goals. The created model is based on the bivalent programming theory. A mathematical model of optimum brand portfolio is created based on linear programming with restricting conditions being the maximum acceptable risk level and budget. The basic types of resources and basic types of relations between brands are explained, which are part of the process of brand portfolio optimization.

Design / Methodology / Approach. Knowledge and many years of experience of mainly economic disciplines were used for the selection of characteristics for brand portfolio specified in this article. Our assumptions were based mainly on project portfolio management, operational analysis and linear programming as well as tools and methods of graph theory.

Findings. Brand portfolio management such as creating, planning, organising and then maintaining a successful brand is a costly and long-term process involving effective marketing strategies and decisions. The prerequisite for brand portfolio creation is deciding on the number and type of brands. A properly constructed brand portfolio is a prerequisite for achieving business goals.

Originality / Value / Practical implications. Brand portfolio optimisation requires sufficient attention; however, rather than the selection of the highest number of brands, it should be based on compilation of a set, according to pre-defined priorities, which would provide the best possible means to meet the company's goals for the current limitations. It should be implemented upon objective rules (in our case maximum allowable risk level and available budget). Frequent changes in the brand portfolio structure are not beneficial since they reduce the ability for the company to achieve its targets and represent excessive use of resources. In addition, qualitative brand characteristics have to be respected in the brand portfolio management, but this was not covered in our research.

Keywords: Brand strategy; Brand portfolio; Optimisation; Resources.

JEL codes: M31; M39; L19.

Introduction

"A brand is a very broad concept. It is a combination of everything that customer takes into account in the purchasing decision-making process. It is not only a trademark but also the associations that arise in the minds of consumers when remembering a specific brand. The brand strikes an emotion in consumers. This is a combination of consumer experience with the brand since the very first 'touch' of the product" (Krizanova et al., 2013).

In today´s marketing practice, many companies simultaneously apply the strategy of multiple brands that collectively consume disposable resources of different kinds. Existing brands need to be planned and managed not only as separate entities, but also as one great whole by using advanced management methods and approaches. All brands, regardless of their success and the life cycle, are part of the brand portfolio. One brand does not allow comprehensive coverage of the whole market, especially if the market is significantly differentiated. If the company wants to increase its market share, it must choose a multi-brand strategy for building its own brand portfolio. The growth of the company is usually

accompanied by creation of new brands, if the company wants to penetrate new market segments or apply new distribution channels.

"In general, current managerial trends highlight innovation as a possible relevant source of brand value. The presence of innovation has an impact on perceived brand value as well as that the character of sector has an impact on brand innovation" (Kliestikova & Kovacova, 2017).

The aim of the paper is to create model that allows building an optimal brand portfolio that will enable a company to achieve its goal. The created model will based on the bivalent programming theory.

Literature Review

The brand portfolio management and optimisation issues are the subject of interest of many studies, especially foreign publications. The brand portfolio literature provides an understanding about key factors that lead to the creation of a successful brand portfolio.

"By means of a strong brand, the company can establish strong and positive relationships with their customers" (Majerova & Kliestik, 2015). Many large companies operating in consumer markets own and sell several brands; they create a brand portfolio (Morgan & Rego, 2009; Dacin & Smith 1994).

Åsberg (2015) defines brand portfolio as "a team of brands working together toward a common goal, thus enhancing firm profits by the strategic positioning of each brand in relation to all other brands in the portfolio". "A brand portfolio is a set of different (sub-)brands that a particular firm offers to customers" (Keller, 2012). There are two basic types of brand portfolios: (i) branded house portfolio containing (sub-)brands that share and/or are endorsed by the same master brand name; (ii) house of brands portfolio contains several independent brands (Aaker & Joachimsthaler, 2000).

One of the important fact is that managers of a brand's portfolios must understand every direct communication on behalf of (sub-)brands. This approach will affect the coherence of the whole portfolio. Nguyen et al. (2018) states that "the path to coherence is consistency in the message making, especially with respect to design, personality, and status of the (sub-)brands. However, the coherence between (sub-)brands in a house of brands portfolio may not be necessarily applauded."

DelVecchio (2000) finds that "the number of products affiliated with a brand portfolio and the quality variance of these products play an important role in affecting consumer impressions of the brand portfolio reliability. One of the main benefits of a well-managed brand portfolio strategy is to provide the link of a firm's products to its overall consumer's perceptions about the company." Chailan (2008) states that "a brand portfolio goes beyond this question of a hierarchical or competitive relationship between one brand with another, in order to examine ways of coexistence and the balance between several brands that are incorporated within a single company, whatever the brand architecture may be." "In terms of a wide business strategy, firms are motivated to be concerned with brand portfolio management because it provides the structure and discipline needed to support and enable a successful strategy for the company. In this sense, brand portfolio becomes particularly salient when a company confronts pressing growth goals or pending mergers, acquisitions, and alliances" (Hsu et al., 2010). "Brand portfolio strategy can be understood as how firms manage their brands and sub-brands within a targeted market, considering the consumer's price and quality perceptions and the competition within the targeted market" (Santos, 2018).

"Many large companies in consumer markets own and market an array of different brands (brand portfolio) and routinely address strategic questions related to brand portfolio management, such as what brands to create or acquire, which ones to modify and which ones to leverage. However, managers generally devote relatively less managerial time, attention and effort to the strategic decision of whether to keep (retain) or kill (discard or discontinue) a weak brand in the portfolio" (Varadrajan et al., 2006).

Brand portfolio management is a very difficult task because companies must deal not only with a single brand but also communicate, collaborate and coordinate a set of (sub-)brands. If (sub-)brands are managed not as whole, but separately and independently, allocation of resources may be at less

than the optimal level. Accordingly, the portfolio may lose its focus (Aaker, 1996; Kayande et al., 2007).

"On the other hand the literature often suggests that larger brand portfolios are inefficient because they lower manufacturing and distribution economies" (Hill et al., 2005).

Based on the literature and empirical research the concepts of project portfolio optimization and project portfolio were defined by authors.

It is possible to perceive **brand portfolio optimisation** as a process related to the assessment and selection of new brands with a concurrent allowance for currently existing brands in order to create a brand that would lead to fulfilling goals of a company smoothly, without exceeding the actual availability of resources or breaching other considered limitations. Creation of the optimum brand portfolio may be one of the key factors of the company's success. The output of optimisation is in the form of decisions regarding inclusion of brands into the portfolio or exclusion of brands from the portfolio.

The **optimum brand portfolio** is defined as a sub-set of brands, which is compiled from an initial set of brands that meet all the stipulated limiting conditions and helps a company achieve the highest possible profit (benefits) or other criteria. Since it is the optimum solution, from the initial set, it is not possible to create other sub-sets that would meet all the limiting conditions and, at the same time, achieve the best possible benefit represented by the objective function.

The development of the current market environment, the formation of micro-markets, the impact of competition and globalisation determine the need to create the brand portfolio that will be able to meet customer-specific requirements and expectations. There is much information about the brand portfolio issue in the literature focussing especially on the advantages and disadvantages of maintaining a brand portfolio, assessing their success, strategic decisions, brand portfolio management process, etc. However, there is no mention of specific approaches, tools and techniques that will allow to building an optimal brand portfolio. These findings were one of the main motives for our research. The main interest was to create a tool that allows construction of a project portfolio based on the predefined criteria.

Methodology

Different potential profitability, financial and capacity limits generally do not allow support for all the brands. It is therefore necessary to make a proper selection and to include into the portfolio only those brands whose effect and mutual relations will ensure fulfilment of anticipated expectations. The purpose of the article is to create a model that allows building an optimal brand portfolio enabling the company to achieve its goal. The model must clearly identify which brand will be part of the portfolio and which will not. One of the options is to apply integer programming with a bivalence variable, which is the starting point for the compiled model. This tool allows selecting brands based on a predefined criteria and creating a portfolio with the potential to achieve the highest benefits. In addition, other optimisation approaches can be applied using group decision methods, pair matching, algorithms based on artificial intelligence, etc.

The general formula of bivalent programming can be written as:

$$f(x) = \sum_{j=1}^{n} c_j \cdot x_j \rightarrow ext \in \{min; max\} \quad (1)$$

where:

- $f(x)$ - criterial function representing the total value of the brand portfolio (net present value, profit, etc.)
- c_j - *j-th* brand evaluation
- x_j - bivalent variable $\{0,1\}$
- n - the number of brands that are being considered for portfolio creation

The second component of bivalent programming consists of boundaries in the form of linear equations or inequalities:

$$\sum_{j=1}^{n} a_{ij} \cdot x_j \leq b_i, \; i = 1,...,m \qquad (2)$$

$$x_j \in D_j, \; j = 1,...,n$$

where:

a_{ij} - *j-th* claim to *i-th* source

b_i - availability of i-th restriction

The D_j set has the following form:

$$D_j = \{0,1\}, \; j = 1,...,n$$

There are these possible brand states:

1. The new brand will be included into the portfolio.
2. The new brand will not be included into the portfolio.
3. The existing brand will be retained in the portfolio.
4. The existing brand will be excluded from the portfolio.

In addition, it is also possible to sell the brand or link brands together. But this model does not solve this option. Based on these assumptions and mathematical notation, we will build on our brand portfolio optimisation model.

Results

The objective function may be expressed by any mathematical function expressing such portfolio value, which is the highest or lowest value necessary to satisfy a particular problem. Most of the time, the objective value is expressed as a value of total profitability, costs, risk and time requirements. The limiting conditions are generally limited resource capacities, necessarily required by brands included in the portfolio. In this case, the resource is defined as financial resources, human beings, allocated time units. It is necessary to recognise two types of basic resources:

1. *Global cumulative resources* Z_G – It is one resource for all the brands defined in an initial plan. It is characterised by a single attribute; one numeric value - amount of capacity (budget) allocated for all the brands whereby cumulated requirement for resources of this kind can't exceed the available capacity. The attribute of global cumulative resource can be expressed as follows: $Z_G = \{capacity\}$.

2. *Segment-specific resource* Z_S – It is an order of resources with a defined order and various capacity. Each of the considered brands must have a segment defined (period of time) in which it will be applied. The cumulated requirement of resources within a segment must not exceed its capacity whereby for each period, there may be other capacity of available resources defined. The attribute of segment-specific source can be expressed as follows: $Z_S = [\{capacity\}, \{capacity\}, \ldots, \{capacity\}]$.

There may be also further limiting conditions such as mutual relations between brands, influencing conditions of their implementation, resource spending demands or influencing the value of objective function.

A brand is understood as an inseparable element, implemented either completely or not at all. Therefore, the optimum brand portfolio may not include brands that would not be implemented to the full extent.

The mathematical expression of optimum brand portfolio:

$$Z = \sum_{i=1}^{n} \left(x_i \, profit_i + K_i x_i \prod_{j=1}^{m^i} x_j^i + K_i' x_i \prod_{j=1}^{m'^i} x_j'^i \right) \tag{3}$$

Relation (3) represents a linear objective (criterion) function expressing a particular effect of brand portfolio that can be maximised or minimised. If objective function represents the level of total profit, the ambition will be to find its top limit (maximum) while meeting all the defined limiting conditions (restrictions). The selected economic criterion of objective function must be additive to secure a condition of possibility to add values of such criterion for all the considered projects.

In case of limiting conditions:

$$\sum_{i=1}^{n} \left(x_i risk_i + K_i x_i \prod_{j=1}^{m^i} x_j^i + K_i' x_i \prod_{j=1}^{m'^i} x_j'^i \right) \leq \text{maximum allowable risk level} \tag{4}$$

$$\sum_{i=1}^{n} \left(x_i \, \text{cost}_i + K_i x_i \prod_{j=1}^{m^i} x_j^i + K_i' x_i \prod_{j=1}^{m'^i} x_j'^i \right) \leq \text{budget} \tag{5}$$

$$x_i \in \{0,1\}$$

For mandatory, correlative and exclusive dependencies:

$x_i + x_j \leq 1$ brand *i* and brand *j* are exclusively dependent

$x_i - x_j \leq 0$ brand *j* is mandatory for brand *i*

$x_i - x_j = 0$ brands *i* and *j* are mutually dependent

where:

n	-	number of initial brands
x_i	-	decision variable of brand *i*, binary variable with range of values $x_i \in \{0,1\}$, value 0 means exclusion of a brand from the resulting portfolio and value 1 means inclusion of the particular brand into the resulting portfolio
$profit_i$	-	expected profit achieved from brand *i*
$cost_i$	-	anticipated costs for implementation of brand *i*
$risk_i$	-	expected risk in implementation of brand *i*
K_i	-	value of support for brand *i*, $K_i > 0$ if support of brand *i* is not defined, then $K_i = 0$
K'_i	-	value of negative influence to brand *i*, $K_i < 0$ if value of negative influence of brand *i* is not defined, then $K'_i = 0$
$\{ x_1^i, \ldots x_m^i \}$	-	decision variables supporting brands of the supported brand *i*
$\{ x_1'^i, \ldots x_m'^i \}$	-	decision variables of the negatively influenced brand *i*
m_i	-	number of supporting brands in a particular defined supporting dependency for support of brand *i*
m'_i	-	number of negatively influencing brands of a negatively influencing dependency of negatively influenced brand *i*
Z	-	objective maximisation function

For requirements of the presented mathematical model of optimum brand portfolio, it is possible to identify five basic types of relations between brands from which the optimum portfolio is created:

1. Mutual dependency: This dependency assumes implementation of all the brands or none of them; it is a 1:1 type of relation.
2. Mandatory dependency: It stipulates which brands are mandatory for other brands; implementation of a particular brand allows implementation of another brand. Yet again, it is a 1:1 type of relation.
3. Exclusive dependency: It enables implementation of a single brand from the particular relation only; it is a 1:1 type of relation, i. e., the resulting portfolio will include one brand at most, of brands being in the exclusive relation.
4. Supporting relation: Implementation of one brand determines the increase of profit generated in other brands or decrease of costs or risks, supporting dependency is a 1:*N* type of relation.
5. Negatively influencing relation: Implementation of one brand determines reduction of profit generated by other brand or increase of costs or risks, negatively influencing dependency is a 1: *N* type of relation.

Dependencies 1–3 belong to the category of dependencies influencing implementation of a brand and dependencies 4 and 5 belong to the group of dependencies influencing the brand attributes. Figure 1 shows further specification of the types of relations.

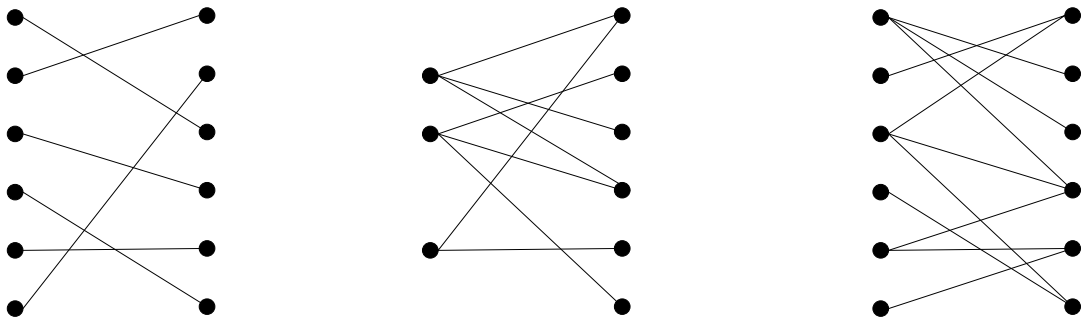

Fig. 1. Types of relations between brands (Source: own processing)

Each company tends to select an optimisation method that is most suitable for its specific conditions and nature of brands. In some cases, it is convenient to apply methods based on quantitative brand characteristics while in other cases methods it is based on qualitative evaluation. It is a priority of an evaluating subject to select the most promising brands according to evaluation criteria that also meet the limiting conditions.

Kral & Bartosova (2017) state that "successful application of multi-brand strategy involves building of a solid position in minds of customers at target markets for brands included in the portfolio. Portfolio should not comprise of independent brands, however, it should reflect the global market dominance.

When creating the portfolio, we recommend applying mainly the following key principles:

1. Synchronize brands in the portfolio with specific customer requirements and ideas.
2. Synchronize brand positioning strategy with generic competitive strategy, product category and market position.
3. Characteristics emphasized in the brand positioning should correspond to each other to create a reliable and trustful brand.

4. One property could be applied to more than one brand within the portfolio – some properties are appealing for each brand and could be applied to more brands in the portfolio.
5. Make strategic decisions related to the portfolio upon results of the continuous monitoring of environment and brand diagnostics only."

It should be noted that this is a multi-criteria optimization model. This model can only be applied using information technology. Selected input parameters are relatively reliably detectable at the company management level. The proposed model is an open system that allows change variables according to availability of direct requirement of the evaluator.

Conclusions

Optimisation and subsequent brand management are important activities for many companies striving to make efficient use of their limited resources. Brand portfolio optimisation requires sufficient attention; however, rather than select the highest number of brands, it should be based on compilation of a set, according to pre-defined priorities, which would provide the best possible way to meet the company's goals within the current limitations. It should be implemented upon objective rules. Frequent changes in the brand portfolio structure are not beneficial since they reduce the ability to achieve company's targets as well and represent excessive use of resources.

Knowledge and many years of experience of mainly economic disciplines were used for the selection of characteristics for brand portfolio specified in this article. Theoretically, if brand portfolio consists of only a single brand, we can talk about the least demanding brand portfolio management. By adding more brands to the portfolio, there is a gradual increase of complexity of the entire system. This is clear by the influence of several brands as well as the influence of interactions, mutual relations and dependences.

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THE EVOLUTION OF CITY LABELLING IN THE LITERATURE

Primož Pevcin

University of Ljubljana, Slovenia, primoz.pevcin@fu.uni-lj.si

Abstract

Research purpose. Various city labels have become increasingly popular both in literature as well as in urban policy-making. It has become relatively common that cities make a proclamation that they either are or would at least like to become, smart, sustainable, digital, creative, intelligent among other things. These proclamations have become popular for the purpose of solving complex urban problems, electoral gains at the local level, and also for marketing reasons. Nevertheless, those city labels often have a blurry line, in terms of what each label represents and should stand for. It is evident that utilising appropriate city categories and labels has become a rather complex issue. Consequently, this paper would like to investigate this issue. The paper questions the dynamics how different city labels were used throughout the time and to which academic fields are specific city labels related to.

Design / Methodology / Approach. We would like to investigate the dynamics how different city labels were used throughout time and which academic fields are specifically related to labels most frequently. For this purpose, we will focus on the content analysis of topics and titles within the Web of Science Core Collection database.

Findings. The evidence suggests that the labelling depends also on the time span we are scrutinising and also on the scientific field the literature being related to. Some city labels have become popular just recently, and their appearance in specific academic fields is the differentiator. For instance, the label 'smart city' is currently the most important label. But it has become popular only several years ago, and this label appears most frequently in the 'technical' literature. The research indicates that city labelling is a rather dynamic process, since some labels are gaining and other labels are losing their popularity in time.

Originality / Value / Practical implications. The debate exists in the literature on the suitability of different city labels and terminology utilised. Some labels derive from top-down perspective, others derive from bottom-up perspective, some labels are more holistic than others, some are politically more acceptable than others, etc. Simultaneously, those city labels are often used interchangeably and sometimes they overlap. This paper would like to contribute to the scientific literature by providing additional evidence and explanations on the utilisation of particular city labels.

Keywords: Urbanisation; Cities; City labels; Content analysis; Smart city.

JEL codes: M39; O35.

Introduction

Various city labelling concepts or categories have become increasingly popular both in literature as well as in urban policy-making. It has become relatively common that cities make a proclamation that they are, or they would at least like to become, smart, sustainable, digital, creative, intelligent, etc. One of the reasons for this lies in the increasing urbanisation, where cities around the globe are growing rapidly. This creates large challenges on the environment, sustainability and governance that cities need to cope with (see World Cities Report, 2016). More than half of the world's population now live in urban areas, and we can observe the growth of cities, with some of them becoming megacities, which generates economic, social and physical problems, stemming from multiple and diverse stakeholders and socio-political complexity of these large units (Chourabi *et al.*, 2012).

The recognition of this trend and accompanying problems require city administrations to develop new tools and ways to manage challenges related to these new problems, including also innovative and more efficient services, increased productivity, transparency and sustainability (Albino *et al.*, 2013;

Gil-Garcia *et al.*, 2015). This means that smartness, intelligence, digitalization etc. are needed when taking up urban planning and policy-making; so cities responded with initiatives of this kind. Moreover, these initiatives are not limited solely to city administrations, but we can observe an increased global attention to build and improve capabilities for solving new emerging problems, and this is reflected also in the scientific literature.

In order to cope with the challenges and also to increase competitiveness and visibility, cities started to proclaim the above-mentioned initiatives, concepts and labels. However, it is worth noting that these concepts and labels have a rather fuzzy nature, and, among others, they have a blurry line among them, although a heavy debate exists in the literature on the suitability of terminology used. Some labels might focus on technology, some on the development of human capital, some on the development of infrastructure, etc. They share the commonality that they attempt to design and describe a roadmap for the development of the cities in the future (Gil-Garcia *et al.*, 2015). Based on this premise, it happens quite often that these labels are used as synonyms also due to the fact that there is no uniform definition for the majority of labels and terminology is often used inconsistently. Thus, some overlapping and cross-fertilisation of the concepts has been acknowledged in the literature (de Jong *et al.*, 2015).

It clearly becomes evident that city labelling itself as well as the proper utilisation of terminology in the literature has become a "wicked" or complex issue. Consequently, this paper investigates the background and some potential patterns that contribute to or build up this wicked issue. Put differently, this paper would like to investigate the dynamics and potential changing patterns, how different labels are used now and were used in the past. Since the problem exists also on accepted definitions of different labels, this study focuses also on the role of different academic fields in the promotion and utilisation of specific labels. This means that we analyse terminology from frequency, time dimension as well as from academic field perspective. It needs to be stressed that this study does not go into details in discussing the differences in the meaning of the labels, but solely focuses on the differences in their appearance in the literature.

Literature Review

It has been already pointed out that there is a debate on the meaning and proper utilisation of different city labels, which steer up from self-proclamations based on political and economic incentives of city administration, a trend sometimes referred to as the 'urban labelling' phenomenon (see Hollands, 2008). This labeling has become very popular recently not just in urban policy-making, but also scientific literature has produced a lot of outputs tackling this issue. This has been the consequence of the efforts to improve social, economic and environmental conditions in the cities as well as to boost their attractiveness (de Jong *et al.*, 2015). The result is that several city categories or labels have been developed, which have entered the developmental policy-making discourse.

This discourse focuses on the investigation how these labels can be differentiated, what is the appropriate utilisation of specific labels, and how actually the terminology and labels have evolved (Dameri and Cocchia, 2013; de Jong *et al.*, 2015). For instance, the discourse can be observed in the statements of some authors who argue that various city labels can be taken as synonyms (Swarnalakshmi & Thanga, 2017) that there are no uniform definitions and terminology is often used inconsistently (Albino *et al.*, 2013). All these city labels should have pretty much the same meaning, as all relate to 'smartness' of the city, and this might arise in the form of sustainability, digitality and intelligence, thus depending only on the meanings and understandings of different words (Cocchia, 2014).

On the other hand, some other authors argue that those categories are actually not conceptually interchangeable and that some labels or concepts are more (or have become) dominant in the literature, although they still argue in favour of evident overlapping between the labels (de Jong et al., 2015). Thus, some concepts should be narrower than others under what they encompass, although the literature does not provide a uniform answer to this issue. Ben Letaifa (2015) develops a hierarchy of labels and states that, for instance, the concept of smart city builds upon both intelligent and creative city, where the former is 'historically' the oldest one deriving from top-down perspective and focusing

on technology, whereas the latter derives from bottom-up perspective, thus community-based and private sector initiatives are its core. Subsequently, smart city concept should be, for instance, a combination of both intelligent and creative city, representing balanced relationship among technology, institutions and people. More straightforward, Trindade *et al.* (2017) argue that smart city concept builds on the intelligent city concept, where specific focus is given to the intelligent use of digital information. Silva *et al.* (2018) argue slightly differently that smart city concept represents an agglomeration of other concepts that utilise ICT, like the aforementioned digital city, intelligent city and sustainable city, but it is more holistic in nature. In contrast, Carta (2015) develops a slightly different trajectory, where smart city concept is an upgraded version of the creative city (it could be labeled also Creative City 3.0). And this is just portrayed to see the complexity of issue, as numerous other references on the relationships among different city labels could be added to the discussion.

It is evident that there is a problem with marking distinctions among different labels, but we have the same problem with obtaining the uniform definitions of specific labels. For instance, Albino *et al.* (2013) have provided a list of more than 20 different definitions of the concept of smart city. They also argue about the confusion that exists when defining other similar concepts. Since the list of labels has increased in time, often reflecting also the developments in academic fields and the installment of the so-called buzzwords that sporadically became popular, it is of importance to investigate how these labels are actually represented in the scientific literature. Since all of those labels and categories tend to have a positive connotation and are used to describe the wish for urban development and modernisation, the main issue is why are we using different labels. Taking this into consideration, the paper does not focus on the discussion about the definition and meanings of different labels, but instead focuses on the presentation of evidence how often they are used in the literature. This has become important also from the perspective that city labels, and even their combinations, are constantly emerging in the literature. This suggests that these labels have often evolved simply to be terminologically innovative.

Methodology

The methodology of the paper builds upon the data collection tools, where the source of scrutinisation is Web of Science Core Collection (see WoS, 2019), which due to its size and influence often serves as a database for scrutinising the development of certain scientific field. This study focuses on the so-called manifest content approach (Berelson, 1952), which means that words or phrases are counted as they appear in the literature. This approach has become increasingly popular in content analysis research due to the advances in methods and technology, offering higher reliability of research outputs, although it has certain limitations related to validity issues (see Dooley, 2016).

We have scrutinised the appearance and frequency of the labels digital city, intelligent city, creative city, smart city, sustainable city, green city, clean city, smart sustainable city, knowledge city, strategic city, ubiquitous city, eco city, information city, resilient city and low carbon city, as they appear in topics category of research listed within the Web of Science Core Collection database, and no limitation was set on the time span of coverage.

Specifically, this research builds upon the existing endeavours in this field (e.g., de Jong *et al.*, 2015) by widening the time span of the database scrutinisation (from its beginnings till February 2019) and by adding additional city labels and categories. The study includes the final list of 15 city labels, thus trying to include the majority of existing city labels as they appear in the scientific literature. Moreover, the variations in coverage within different academic fields, i.e. categories, associated with those labels is also taken into account. Thus, the study would like to upgrade the previous research not just by exploring the recent developments and potential changes in labelling patterns, but also by adding some potential new labels that might have emerged recently.

Finally, it needs to be stressed that this content research has limits, since it builds only on the investigation of one database although this collection includes full-text articles, reviews, editorials, chronologies, abstracts, proceedings (journals and book-based) and technical papers. Moreover, the study does not focus on the analysis of specific content relationship among different labels, since this would go beyond the purposes of the research, which focuses mainly on the providing evidence on the

appearance of labels in the scientific literature, taking both time as well academic discipline dimension into the account. However, no limitation was put on the type of scientific output, and the cut-off point for the analysis was the content of the database on February 28, 2019.

Results

Table 1 presents the results of our content analysis. The research output presents total number of hits in the topic category, total number of hits that appeared since 2015 and the number of hits associated with the two academic fields with the largest number of associated hits.

Table 1. The appearance of city labels in the literature (Sources: Web of Science Core Collection, 2019; author's compilation)

Label	Number of hits in the topic (total)	Number of hits in the topic (since 2015)	Two WoS categories with largest number of hits (number of hits in brackets)	
			First	Second
Creative city	364	219	Urban Studies (151)	Geography (97)
Sustainable city	751	449	Urban Studies (189)	Green & Sustainable Science & Technology (169)
Green city	256	152	Urban Studies (57)	Environmental Sciences (41)
Knowledge city	114	41	Urban Studies (46)	Regional & Urban Planning (31)
Resilient city	127	90	Urban Studies (40)	Environmental Sciences (24)
Strategic city	20	11	Urban Studies (4)	Geography (3)
Information city	31	12	Urban Studies (5)	Architecture (5)
Eco city	379	223	Environmental Sciences (99)	Urban Studies (83)
Low-carbon city	317	173	Environmental Sciences (103)	Energy Fuels (85)
Clean city	32	21	Environmental Sciences (5)	Architecture; Computer Science Information Systems; Economics (each 4)
Smart sustainable city	23	/	Green & Sustainable Science & Technology (11)	Environmental Sciences (10)
Ubiquitous city	45	9	Telecommunications (14)	Computer Science Information Systems (13)
Digital city	283	101	Computer Science Theory & Methods (61)	Computer Science Information Systems (61)
Intelligent city	112	65	Computer Science Theory & Methods (17)	Engineering, Electrical & Electronic; Management (each 13)
Smart city	4,741	4,136	Engineering, Electrical & Electronic (1388)	Computer Science Information Systems (977)

The results shown in the table indicate that the label of 'smart city' prevails in the literature by far the most among the above-listed 15 city labels, followed by the labels 'sustainable', 'eco' and 'creative' city. As of February 28, 2019, the label smart city has appeared in 4,741 hits within the topic field of the database. Interestingly, all other labels together do not have as many hits as this label, which suggests a very large popularity of the label.

This popularity is, however, very recent, since more than 4,100 hits correspond to the year 2015 and later. It might be argued that smart city label is the most frequently used label among other (more or less) closely related concepts, yet the time dynamics is also interesting. The popularity of this label is very contemporary. Actually, if we scrutinise the time component, we can see that the label 'sustainable city' prevailed until 2012 (the number of total hits in topic category 256 versus 244 in favour of 'sustainable city' label), after it was only surpassed by the label 'smart city' in 2013. However, the gap between the two labels has substantially increased already in 2014 (604 versus 299 hits in topic category in favour of the label smart city), and afterwards this gap has widened even more (see WoS, 2019).

The utilisation of the label ‘smart city’ has received a large increase in popularity just recently. This means that also scientific literature is contributing to its popularity, although it would be interesting to determine the causality, but this goes beyond the scope of this study. The inspection of time dynamics also reveals that some labels have been increasingly appearing in the literature, and others facing the opposite trend. For instance, the label ‘resilient city’ can be found in 90 items after 2015 and has surpassed the label ‘knowledge city’ with only 41 new hits since 2015. The same is valid for the label ‘ubiquitous city’, with just 9 new hits after 2015. In contrast, apparently after 2015 the new label has been coined, i.e. smart sustainable city, which even did not exist in the scientific literature covered by WoS database before 2015.

Furthermore, if we relate hits to the category component, we can observe that variations exist in which academic fields a particular label appears more often. We can actually point out three major clusters of labels. The first cluster of labels is related to the category ‘Urban Studies’. The relative majority of labels creative city, sustainable city, green city, knowledge city, resilient city, strategic city and information city belong to this category when categorised to particular scientific output. The second cluster of labels corresponds to the category ‘Environmental Sciences’, where the relative majority hits associated with labels eco city, low-carbon city and clean city can be found. We can also add the label ‘smart sustainable city’ to this category. The third cluster of labels can be described as the ‘technical cluster’, where the use of labels ubiquitous city, digital city, intelligent city and smart city prevails. These labels have been mostly related to the categories Electrical & Electronic Engineering and Computer Science Information Systems.

Thus, variations exist in the appearance of specific city labels, their popularity as well as their affiliation to particular academic fields. For instance, labels smart, digital and intelligent city are more often used in the technical literature, and we might consider them as more technical labels. On the other hand, the labels ‘creative’, ‘sustainable’, ‘knowledge’ and ‘resilient’ have more soft and social sciences related connotation, and the authors from these academic fields might prefer them. Finally, it seems that labels ‘eco’, ‘low-carbon’ and ‘clean’ tend to imply more environmentalist perspective of modern cities, so the authors from those academic fields might prefer them. However, the clear-cut division among the clusters might not be so straightforward. This holds if we scrutinise also the second academic field with the most hits related to a particular label. Academic fields of social sciences and environmental sciences have particularly thin line of division, given the observed overlapping of these two fields (see the last column in the table).

Conclusions

City labelling has become increasingly popular mostly due to the urbanisation trends, although the research on this labelling phenomenon is still lacking. The debate exists in the literature on the suitability of different city labels and terminology used. There is also a question how frequently specific labels appear in the literature. By investigating 15 different city labels we have found out that the appearance of labels in the literature differentiates. This means that some labels are more popular than others. Moreover, also time dynamics is important, as some labels have emerged and have become popular later than others. The appearance of labels also varies between different academic fields, and we can speculate that the above-listed 15 labels can be categorised in three main clusters of labels.

The label ‘smart city’ appears most frequently in the literature, and by a very large margin, although this popularity is very recent. The possible explanation for this recently evolved popularity could be that this term might be much more politically and technologically neutral; it includes also social and sustainable dimensions; and it represents some sort of utopia that could easily be applauded given the positive connotation of the word ‘smart’ per se (see also Eremia *et al.*, 2017; Grossi & Pianezzi, 2017).

Nevertheless, a more in-depth investigation of this labelling phenomenon, also by scrutinising other important scientific databases, would be highly appreciated. The research could also be upgraded by adding latent content analysis approach to boost the validity of research results. However, this study gives an important input into the understanding of the development and utilisation of different city

labels, which is important from the perspective of their popularity. The research indicated that city labelling is a rather dynamic process, since some labels are gaining and other labels are losing their popularity in time. And new city labels might emerge also in the future, partially also to accommodate the necessity of terminological innovativeness.

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ASSESSMENT OF THE FINANCIAL PERFORMANCE TRANSPARENCY OF PUBLIC BENEFIT ORGANISATIONS

Santa Voitkane[1], Ingrida Jakusonoka[2]

[1,2] Latvia University of Life Sciences and Technologies, Jelgava, Latvia, Ingrida.Jakusonoka@llu.lv

Abstract

Research purpose. The aim of the research is to assess the transparency of financial performance of public benefit organisations (PBOs).

Methodology. To achieve the aim and to accomplish the tasks set, general-scientific methods were used: the monographic method, the method of document analysis and the graphical method. A statistical analysis method – descriptive statistics – and a sociological research method – surveying – were used as well.

Findings. Since 1 October 2014 when the Public Benefit Organisation Law came into force in Latvia, the number of PBOs has been increasing every year. On 1 January 2018, the number of organisations with valid PBO status had reached 2,775. To get an insight into the opinions of Latvian PBOs on the disclosure of financial information, a questionnaire was developed. The survey was attended by 201 respondents. The questionnaires revealed that 64.68 percent of the respondent organisations had a website or a web page on a social network, although only 21.89 percent of these respondents' websites contained some sort of financial information. In parallel with the PBO survey, a society survey was conducted to get an overview of the public opinions about the need to make PBO financial information freely available. The survey was attended by 116 respondents. The results indicated that although the PBO attitude to the disclosure of financial information was considered to be reserved, the public saw the need for such information. In view of the insufficient availability of financial information in the country and the low activity of PBOs themselves in voluntarily disclosing their financial information on their websites, it is necessary to carry out activities that supplement free-access information resources and/or motivate the organisations themselves to provide free access to such information.

Practical implications. Based on the experience of other European countries, the Ministry of Finance has to consider amending the PBO Law to oblige PBOs to publish their annual financial and performance reports on their websites or in an equivalent way, thereby contributing to the transparency and accountability of the PBOs towards the society.

Key words: Public benefit organisation; Donations; Reports; Transparency.

JEL Codes: L31; M41.

Introduction

The NGO sector is appreciated both in Europe and in the whole world for its growing contribution to the development of the society and the country as well. Understanding the role of NGOs, countries seek to enhance the performance of the sector, particularly the organisations benefitting the entire society directly or indirectly, by means of various mechanisms. Public benefit status is the most widespread mechanism of this kind of support, which contributes to the performance of public benefit organisations (PBOs) through tax relief and other preferences granted. The key privilege provided by PBO status is the right to actively attract donors. Even though the status imposes restrictions on the financial performance of such organisations, the privileges granted increase the number of PBOs, which, in its turn, raises a question about the supervision sufficiency and performance transparency of the organisations as well as their openness to the society as the main supporter and beneficiary. The government and PBOs themselves have to actively care about maintaining the image of PBOs as trustful organisations, yet feedback to the society does not always occur or the information given is not always sufficient to get a complete insight into the performance of the organisations.

The research aim is to assess the transparency of financial performance of PBOs and the opportunity of the society to get extensive, credible and essential information about the performance of PBOs.

To achieve the aim, the following specific research tasks were set:

1. To assess the legal framework and supervisory measures for PBOs
2. To examine the public availability of financial information on PBOs and identify the opinions of the society and experts about the transparency of the information.

Literature Review

PBO status is an instrument for promoting public benefit activities, which is widespread in Europe and which allows allocating part of NGO and public resources for tackling problems of national interest as well as for development. As the non-profit organisation sector expands, the issues of legitimacy of the organisations and whether the supervision system introduced by the government is sufficient to make the sector open and transparent become increasingly important.

The term transparency could be interpreted differently. According to Palmer (2013), transparency in the context of NGOs could be defined as the availability of relevant and credible information about the organisation's performance, financial situation and governance. Performance transparency is an instrument for building trust. The more transparent the performance of an organisation is, the higher the ratings of the organisation are given by the public, donors and supervisory institutions (Palmer, 2013).

In recent years, EU institutions as well as national governments made efforts to solve the NGO transparency and accountability problem by strengthening the requirement of supervisory bodies to provide transparency and the public's right to receive extensive, relevant and reliable information about NGO performance aspects (Exploring transparency and accountability..., 2011). The present research focuses on ensuring PBO transparency through reporting not only to national authorities, as stipulated by the law, but also to the public, and, as far as the authors know, the present research is the only one in Latvia that examines such aspects of PBO performance.

As the non-profit organisation sector expanded, an increasingly essential matter is the legitimacy of the organisations and whether the national supervisory systems are sufficient for ensuring the sector is open and transparent (Exploring transparency and accountability ..., 2011). However, not only information disclosure but also accountability for the content of the information and its influence on its users are important. As pointed out by T.P.Gordon et al. (Gordon *et al*., 2010), successful communication with stakeholders is possible through annual financial and performance reports if the reports meet five criteria: completeness, accessibility, transparency, full disclosure and relevance.

It has to be understood that the performance of a PBO, unlike that of a commercial enterprise, is not associated only with the financial performance of it. An assessment of financial performance is complicated, and it could be viewed through various dimensions. As stressed in the scientific literature, only combining quantitative and qualitative information gives an opportunity to transparently compare the social performance of a PBO with the resources used in order to prove the social and economic effectiveness of the PBO's activity. The key purpose of information disclosure is to build confidence in the organisation's activities, demonstrating both the organisation's competence in its field of activity and the fulfilment of its promises (Gordon *et al.*, 2010; Dyczkowski, 2016).

Reports on PBO activities play two important roles. First, the reports guarantee the organisation's accountability towards the public and the state; second, the reports contribute to the effectiveness and usefulness of the activities (Dyczkowski, 2016). Mitchell (2014) points out that reporting is intended for informing various stakeholders about the following three issues:

1. Social impacts that the organisation has created by its disposable resources
2. Stimulating solutions to social initiatives, for example, the overall usefulness of subsidies, tax relief and tax exemptions
3. Effectiveness of the supervision procedure that prevents misappropriation of funds

In many countries, information disclosure forms are designed in a way to build confidence in the following aspects:

- Organisation's goal and public benefits provided
- Use of property and/or funds
- Donations received and accounting for the donations
- Administrative costs and compliance with the restrictions imposed
- Economic activity, the size and role of it to achieve the goals
- Value of assets (Exploring transparency and accountability..., 2011)

Financial and performance reporting by PBOs is important not only for supervising the effectiveness and usefulness of their activities in respect to public funding spent but also for disclosing information to all the groups of stakeholders about their economic resources and achievements. The groups of stakeholders are represented not only by lawmakers and supervisory bodies but also by donors and the society as a whole (Waniak-Michalak & Zarzycka, 2012). Gordon and others (2010) point out that effective communication with stakeholders could be done through published annual financial and performance reports if the reports meet five criteria: completeness, accessibility, transparency, full disclosure and relevance. Direct public and indirect governmental support given to PBOs imposes an obligation on the PBOs – not legislative but at least based on ethical principles – to inform the public about the organisation's activities and performance, thereby demonstrating its accountability for the funds received and spent. However, the government and/or organisations not always disclose such information to the public, which may lead to an increased mistrust of the organisations (McDowell *et al*. 2013). The availability of information to external users in particular not only affects the opinions of individuals on the organisation's activities but also helps to determine the effectiveness of fund collection efforts in the future, the amount of voluntary contributions and the overall level of public support to the organisation (Dyczkowski, 2016). Some donors donate their funds spontaneously, based on momentary emotions (Dyczkowski, 2015), whereas others make their decisions carefully and based on feasibility studies. The need for relevant information is particularly important when dishonest behaviour by the NGOs or even NGO fraud scandals occur. Such cases motivate donors to carefully assess which NGOs should be given some support (Gordon *et al.* 2010).

The website of an organisation is an instrument allowing reducing the asymmetry of information, voluntarily supplying information to any interested individual about the organisation's activities as well as demonstrating confidence and readiness for external control (Tremblay-Boire & Prakash, 2015). In some European countries, for example, in Poland, PBOs are obliged to publish both their annual financial reports and their performance reports on their websites. However, in the countries where no such an obligation has been imposed, information disclosure or undisclosed is a free choice of the organisation. As proved by some research investigations in Europe and America, the voluntary initiative to publish a financial report or disclose other financial information is quite low (Tremblay-Boire & Prakash, 2015; Striebing, 2017).

Methodology

To achieve the aim and to accomplish the tasks set, in this research, general-scientific methods – the monographic method, the method of document analysis and the graphical method – as well as a statistical analysis method, namely, descriptive statistics, and a sociological research method, surveying, were used.

The research used research papers by foreign authors who focused on the role of financial performance transparency of PBOs and non-profit organisations as a whole. The research analysed laws and cabinet regulations binding upon Latvian PBOs, legal documents of other European countries as well as research investigations into the NGO sector of Latvia done by the Latvian Civic Alliance. The source of statistical data on PBOs was informative materials provided by the State Revenue Service (SRS) as well as other information.

Results

Since 1 October 2014 when the Public Benefit Organisation Law came into force in Latvia, the number of PBOs has risen, on average, by 179 organisations a year, which was a 13.94 percent annual increase. On 1 January 2018, the number of organisations with valid status of PBO had reached 2,775 (Fig. 1), which accounted for approximately 11 percent of the total number of associations, foundations and religious organisations registered with the Register of Enterprises of the Republic of Latvia.

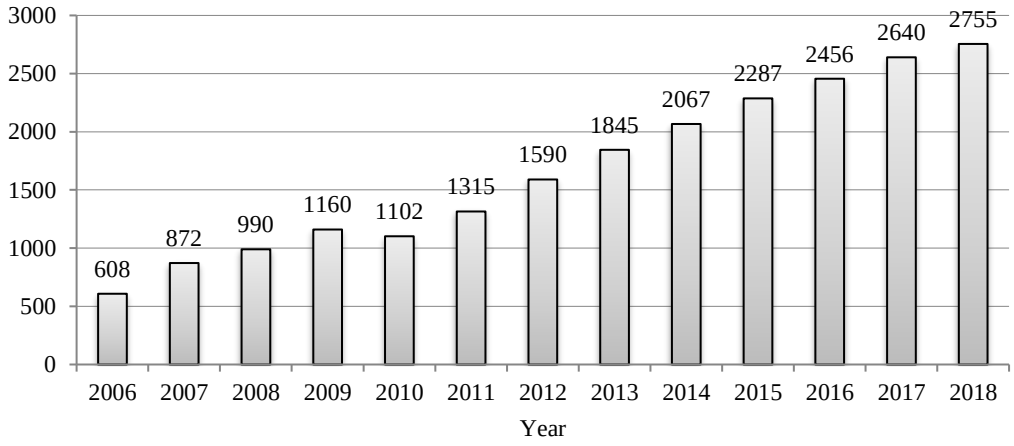

Fig. 1. Changes in the number of PBOs in Latvia in the period 2006–2018 (as on 1 January) (Source: authors' construction based on the data of the Ministry of Finance and the State Revenue Service of the Republic of Latvia)

Achieving the goals of organisations mainly depends on available public financial assistance. Tax relief allows donors to effectively attract sponsors and hence funds. For this reason, this particular aspect is often the most important one encouraging to get PBO status (Dyczkowski, 2015). In 2015 in Latvia, according to the SRS, donations and gifts to PBOs totalled EUR 57.31 million, whereas in 2016 the total was EUR 60.57 million.

In Latvia, PBO status gives some advantages to the PBOs, yet a number of significant financial restrictions are imposed on them, which mainly relate to the donations received. If the total amount of donations received by a PBO in a calendar year exceeds 12 minimum monthly salaries or EUR 5, 160 (since 1 January 2018), such organisation has a duty to use not less than 75 percent of such total amount and revenue from their economic activities only for such field of public benefit activities, which is referred to in the decision on granting of PBO status to the relevant organisation. Administrative expenses, regardless of the amount of revenue, may not be more than 25 percent of general donations used in the relevant taxation period (Sabiedriskā labuma organizāciju..., 2004).

In Latvia, PBOs are supervised by the SRS in cooperation with the Public Benefit Commission, and the compliance of PBO activities with the law, just like it is in the majority of other European countries (Moore *et al*., 2008), is supervised through two major information sources – annual financial reports containing financial information and annual performance reports (previous year performance reports and future activity plans) that contain qualitative or descriptive information.

In Latvia, the Public Benefit Organisation Law does not prescribe that PBOs are obliged to disclose annual financial reports and/or performance reports on their websites or in other ways. Accordingly, the main source of information on PBOs in Latvia is the SRS Register of PBOs or a public database available on the SRS website. The database provides both current and historical information on all the organisations which have been granted and which have lost their PBO status since the PBO Law became effective. Starting with 2010, all the PBO reports – previous year performance reports and

future activity plans – submitted during the status validity period are publicly available in the database. The SRS does not disclose PBO financial reports, yet the electronic copies, as prescribed by the regulations regarding annual financial reports for associations and foundations, are transferred to the Register of Enterprises of the Republic of Latvia not later than within 5 business days after they have been received. The Register of Enterprises, as well as Lursoft IT Ltd as a user of the reports, makes the reports available publicly (Fig. 2). Access to PBO financial information through the Register of Enterprises and Lursoft IT Ltd is not unrestricted and free of charge; the access is provided after a fee has been paid. It follows that the government does not ensure free access to PBO financial information for the public. Free access to financial information depends on the wish of PBOs themselves to implement best practice principles.

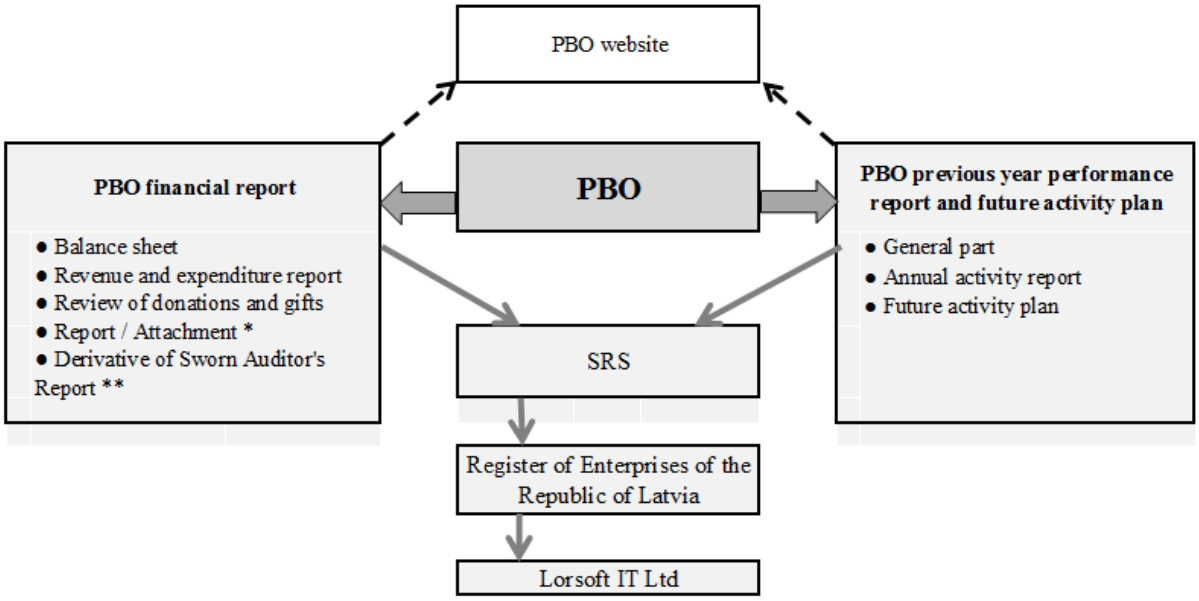

Fig. 2. Flow of PBO annual financial and performance reports
(Source: authors' construction based on analytic studies of legal acts)

In other European countries, the way of disclosing PBO financial information is completely opposite. After examining information resources, among them legal acts, pertaining to PBOs in European countries, the authors found totally five solutions to improving the transparency of PBO performance:

- *National institution-maintained PBO registers*, which provide both qualitative descriptive information and financial data (the United Kingdom, Ireland, Hungary). For example, in the United Kingdom, Ireland and Hungary, the governments guarantee the availability of extensive and easy-to-use PBO public registers that supply information on various performance aspects of the PBOs, as well as annual reports. The British Charity Commission that controls and ensures information disclosure makes also audited annual financial reports available in addition to the basic information (goal, target audience, address, contact details, total annual revenue and expenditure by year, founders, etc.) provided by the Register of Charity Organisations if the revenue of the organisation exceeds GBP 25, 000 or approximately EUR 28,600. It should be added that the database allows performing analyses of the sector by size and kind of revenue and by other variables (Find charities, [s.a.]). Such databases help the public, donors and other users of information to make informed decisions about which charity organisations they wish to fund and to support by voluntary work or the services of which organisations they wish to buy. The practice of disclosing information in the mentioned countries is a good example.

- *Binding legal acts prescribe PBOs to publish* their annual financial and performance reports (Poland, Croatia, the Netherlands, Hungary). For example, Section 4b and Paragraphs 1a and 2a of Section 23 of the Public benefit and Voluntary Work Law of the Republic of Poland prescribe that

PBOs are obliged to make their annual financial and performance reports available, including on their websites (Ustawa o działalności pożytku..., 2003). Similar legal provisions are included in CLXXV law of Hungary on the rights to unite, public benefit status and NGO performance and support (2011); Paragraph 4 of Section 30 of the law provides that organisations have to publish their annual financial and performance reports if they have their own websites. In addition, the law requires that NGOs have to make the information available until data for the next calendar year are disclosed (2011. évi CLXXV..., 2011).

- *PBOs are obliged to publish their annual financial reports in the official newspaper (France).* The legislation of France prescribes that associations and foundations that have received more than EUR 153, 000 in donations and/or subsidies in the reporting year are obliged to publish their financial reports in the *Journal Officiel des Associations et Fondations d'Entreprise* (Association reconnue d'utilité..., [s.a.]), which is actually similar to the official newspaper 'Latvijas Vēstnesis' issued in Latvia.

- *The NGO sector establishes and maintains a PBO/NGO sector organisation database with extensive financial information about the organisations (Italy, Spain)*. For example, PBOs in Italy have an opportunity to create the organisation's profile in the portal 'Italia non profit'. The technical capabilities of the portal allow depicting the information placed in an attractive and easy-to-perceive way – basic information, activities done and financial information. Such a solution is an excellent opportunity for the organisations having no resources for creating and maintaining their own websites. The portal allows its users to select organisations by various criteria as well as compare the organisations.

- *The PBO database with the 'trust mark'*. The Czech PBO Association has created a database only for the organisations that have acquired a trust mark. The trust mark 'Spolehlivá veřejně prospěšná organizace', which translates as a trustful PBO, was created in Czechia as a response to the demands of the public and the organisations themselves for transparency. The purpose of the trust mark is to inform potential supporters and the society as a whole that PBOs properly and transparently manage their entrusted resources to achieve the goals set (O značce [s.a.]). The concept of such a mark acts both as a self-control instrument and as a demonstration to the public of responsible operational practices. Undoubtedly, such a demonstration also allows competing against other NGOs; yet at the same time, because of the cost incurred, it is available to the organisations being able to invest in acquiring such a mark.

To get insight into the opinions of Latvian PBOs on financial information disclosure as well as national supervisory requirements regarding the PBOs, a questionnaire was designed by the authors. The questionnaire included 14 questions that could be divided into 3 groups: basic facts of the organisation; assessment of the supervisory mechanism for PBOs; attitude of PBOs to the disclosure of their financial information. The questionnaire was designed in electronic format by using Google Forms. E-mails with a request to participate in the survey and a link to the electronic address of the survey was sent to as many as 1,610 PBOs; however, given the fact that 42 e-mail addresses were inactive, the questionnaire was sent to totally 1,568 PBOs, which accounted for 56.50 percent of the total number of PBOs in Latvia as on 1 January 2018. The request e-mails were sent periodically, from 28 February to 21 March 2018. The PBO e-mail addresses were acquired from the PBO database. The selection of potential respondents was based on a randomised list of PBOs (MS Excel function 'Rand()').

Responders to the request to participate in the survey totalled 201, of which 66.67 percent were organisations with 5 or more years of experience in having PBO status.

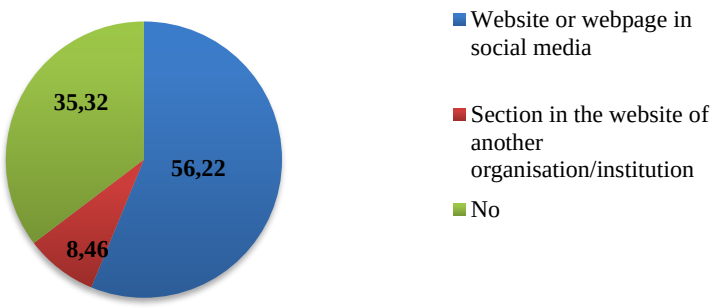

Fig. 3. Percentage breakdown of respondent replies to the question about whether the organisation has a website (Source: authors' construction based on PBO survey data, *n*=201)

An affirmative reply to the question of whether the organisation had a website or a web page in social media was given by 64.68 percent of the respondents (Fig. 3). Among these respondents, 113 (56.22 percent of the total) had a website or a web page in social media and 17 (8.46 percent) had a section in the official website of another organisation or institution. This means that 130 organisations had an opportunity to inform the public about their activities and related matters. However, 71 did not have such an opportunity (Fig. 4). An analysis of the questionnaires returned by the organisations of this group revealed that 50 (70.42 percent) had acquired their PBO status in the period from 2005 to 2012. This means that these particular organisations did not make it possible to familiarise the public with their activities, even though they operated for more than 5 years, especially in view of the fact that 38 of the organisations declared donations as one of the key sources of revenue.

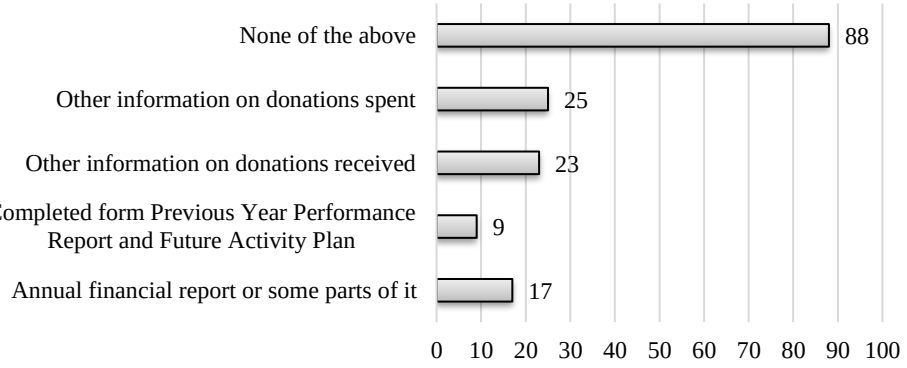

Fig. 4. Breakdown of the respondent organisations by type of information available on their websites (Source: authors' construction based on the survey of PBOs, *n*=130)

The respondents who gave an affirmative reply to the above-mentioned question were requested to indicate whether their websites had some of the kinds of information presented in Figure 5. Of the 130 respondent organisations, 88 (67.69 percent) did not disclose information of any of the mentioned kinds (Fig. 5). This group included 12 out of 17 organisations that indicated they had a section in the website of another organisation. The authors suppose that some of the organisations did not place their financial reports and completed forms because of potential content restrictions and/or due to the lack of technical possibilities. The reasons why the remaining 118 organisations chose to disclose neither their financial nor performance reports should be associated with their notions rather than technical barriers. According to the survey, only 44 (21.89 percent) respondent organisations placed some of the mentioned four kinds of information on their websites. Most of them were those that chose to place on their websites not their officially approved annual financial or performance reports but self-prepared financial information about donations received (17.69 percent) and/or spent (19.23 percent) (Fig. 5).
Most respondents, totally 87 or 43.28 percent of the total, had doubts as to whether they needed to disclose their financial performance information to the public when asked whether their organisations

would make their financial performance information available with pleasure, thereby exercising a best practice. An affirmative reply regarding the wish to disclose their financial performance information was given by 80 (39.80 percent), whereas a negative reply was made by 34 (16.92 percent) of the respondents. The results indicated that most of the organisations wished to provide financial information or at least considered such an option.

The last question in the questionnaire familiarised the respondents with the fact that in other European countries such as Estonia, the United Kingdom, Ireland and Hungary, PBO annual financial reports or their parts are also published on national institution websites. The respondents were asked whether, in their opinion, the SRS of Latvia too should make not only performance reports but also financial reports or parts of them available publicly. An analysis of the replies revealed that 55.22 percent of the respondents were not quite sure and chose the reply option 'maybe'. A negative reply was given by 27.36 percent, whereas an affirmative reply was given by only 17.41 percent of the respondents. The survey results implied that most of the PBOs viewed financial reporting with caution and were not convinced of the need for such a practice. Such a response does not make sense, as all the annual financial reports are available on the websites of both the Register of Enterprises and Lursoft IT Ltd where anyone may view them for a fee. In this case, the question is whether the public has to be given a possibility to view such information without any restriction and free of charge.

An explanation of such an attitude should be sought in the management of an organisation – the professionalism of the management. Examining the circumstances under which organisations voluntarily choose to disclose their financial information, Striebing (2017) found that the wish of an organisation to voluntarily disclose its financial information might be explained by the professionalism of the organisation's management and stressed the role of a management comprehending and supporting the principles of professionalism and best practices.

Because the number of respondents was small, that is, only 57.43 percent of the minimum representative sample size, the results of the survey did not statistically represent the situation in the entire PBO group. Assuming that the total number of PBOs was 2,775 (N), at the significance level of 0.05 (e), it was required to survey at least 350 (n) PBO representatives in order to get representative data ($n=N/(1+N*(e)^2)$) (Israel, 1992). Even though the small number of PBO representatives did not allow identifying the overall situation, the authors supposed that there was a low probability that the overall situation might be considerably different. The relevant legal framework does not require PBOs having PBO status to report to the public on the aspects of their performance. For this reason, if a PBO is not ultimately dependent on public support, feedback from the public might be considered unnecessary by the PBO. In the authors' opinion, comprehensively reporting to the public on their progress and performance is not among the best practices of PBOs, and it is likely that most of the PBOs do not understand the need for it.

To identify how many Latvian PBOs had websites or web pages in social media, the authors examined all the performance reports for 2016 or 2015, available in the SRS PBO database, of the organisations having the status of PBO as on 1 January 2018. As of this date, totally 2,775 organisations had valid PBO status, but reports had been submitted by 2,536 organisations. Totally 991 organisations had specified their addresses in the general information (contact detail) section of their reports or on their websites or web pages in social media, accounting for 39.08 percent of the total number of the organisations examined. According to the results, the SRS PBO register and the performance reports available in the database were probably the only source of information on more than half of the PBOs. It is understandable that not all PBOs are financially secure enough to afford to create and maintain a website; besides, the scope of their activity is not broad enough to consider it necessary. At the same time, broad free-of-charge opportunities are provided by social media that can serve as free-access information platforms. The examination of PBO performance reports revealed that 48 PBOs or about 2 percent of the total number of the PBOs examined had specified their web page addresses created in social media. However, in view of the fact that it is required to specify the web page address in the form and that there is broad scope for interpretation whether a website and a web page in social media are the same thing, this indicator value was probably higher.

To identify how many PBOs having websites preferred publishing their annual financial reports or some parts of the reports, their performance reports and/or other financial information, the authors examined 300 PBO websites. The number of the websites examined made up 30.27 percent of the total websites identified. The website addresses were acquired from the above-mentioned examination of PBO performance reports. In view of the limited technical possibilities of social media, the social media addresses were not included in the list of website addresses prepared for the website examination. The list was randomised (MS Excel function 'Rand()'), and the first 300 addresses were examined. However, in view of the fact that 32 addresses were inactive, 32 other addresses were examined to acquire the initially planned data sample. The relatively large number of inactive website addresses indicated that the total number of PBO websites determined initially was actually smaller.

When examining the PBO websites, the authors identified whether a website had any of the following information: a balance sheet, a revenue and expenditure statement, a review of donations and gifts, a table headlined 'Detailed information on donations and gifts spent', an annual financial report, other financial information, a performance report for the previous year and a plan for future activities.

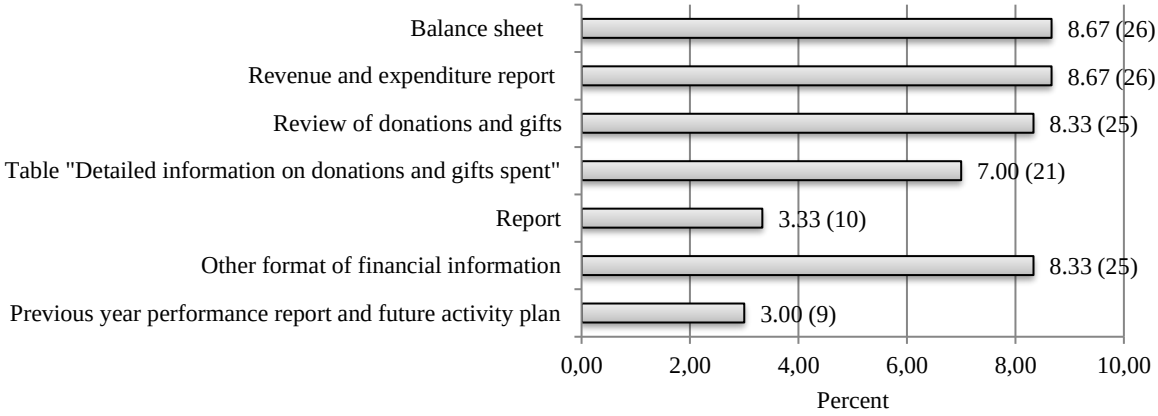

Fig. 5. Types of information available on PBO websites, percent and number
(Source: authors' construction based on a study of 300 PBO websites)

The examination of PBO websites allowed concluding that most or 85.33 percent of the websites examined did not contain any of the information sought. This means that only 14.67 percent or 44 of the PBOs examined had voluntarily placed their annual reports or self-produced, selected financial information on their websites. Most often, a balance sheet, a revenue and expenditure statement and other financial information were available on the websites – each of them could be found on the websites of 26 PBOs. Annual financial reports (10 PBOs) and annual performance reports (9 PBOs) were available least often (Fig. 5).

The number of the websites examined was representative and could give insight into the overall situation and the trend in the provision of information on the PBO websites. The PBO initiative in the disclosure of their financial information could be rated as low.

To get insight into the opinions of the public as the recipient of PBO services and the PBO supporter about the need to make PBO financial information freely accessible, a survey of the public was conducted in parallel with the survey of PBOs. The survey, just like that of PBOs, was conducted from 28 February to 21 March 2018. The questionnaire was designed in electronic format and, together with a request to participate in the survey, was distributed in social media. The questionnaire contained 11 questions, of which 3 requested to specify gender, age and education.

In view of the fact that the term PBO is not frequently used in the public arena and instead the following ones are more often referred to: a charity organisation, an association and a foundation, the questionnaire provided a simple definition for a PBO.

When the survey was over, 116 respondents, of which 80 (68.97 percent) were women and 36 (31.03 percent) were men, had submitted their replies. The age structure of the respondents revealed that the

percentage of those aged 25 to 40 was the highest, accounting for 57.56 percent of the total. The second largest group was those aged 41 to 60 – 36.21 percent. Of the respondents, 56.03 percent had higher education and 36.21 percent had secondary professional education.

Among the respondents, 90 or 77.59 percent had given some support to a PBO. Based on this fact, one could assume that 77.59 percent respondents could have a strong wish to be familiarised with PBO performance. Of the total respondents, 48 or 41.38 percent replied affirmatively to a question whether they had examined publicly available information on the performance of some PBO. Of this group, 42 supported some PBO activities. This indicates that less than half of the respondents who were really engaged in achieving PBO goals (46.67 percent) were interested in information on the progress and performance of the PBOs. The fact that not every PBO supporter followed relevant developments is a usual phenomenon being described in the scientific literature (Dyczkowski, 2015; McDowell *et al*. 2013; Palmer, 2013). It could be explained by their trust in PBOs and/or their spontaneous, emotion-based actions that are not followed by any further interest in the PBOs.

The respondents who noted that they had examined relevant information were requested to specify the particular information sources they used. Of the reply options provided in the questionnaire, the most frequent reply was PBO websites, which was given by 66.67 percent of the total respondents of this group. Besides, the respondents acquired information from other websites providing the information on the PBOs they were interested in – 31.25 percent of the total respondents of this group. It has to be mentioned that only six respondents indicated annual financial reports as an information source used. This small respondent number might be explained by a number of reasons; the main ones are as follows: unavailability of financial reports and a lack of knowledge of how to analyse financial information, which do not make a wish to get acquainted with such information.

The respondents were asked whether they would be interested in PBO financial information, referring to data on donations spent as an example; 44 (37.93 percent) answered ‘yes’. However, 39 (33.62 percent) of the respondents noted that they were not interested in such information, and the remaining ones – a similar proportion – indicated they could be potentially interested in it. The similar proportions of the replies indicated that the prevalence of interested individuals was unconvincing. Nevertheless, the reply ‘maybe’ should not be viewed as negative, and one can assume that, of the total respondents, 66.38 percent would wish to see or at least considered an opportunity to see PBO financial information.

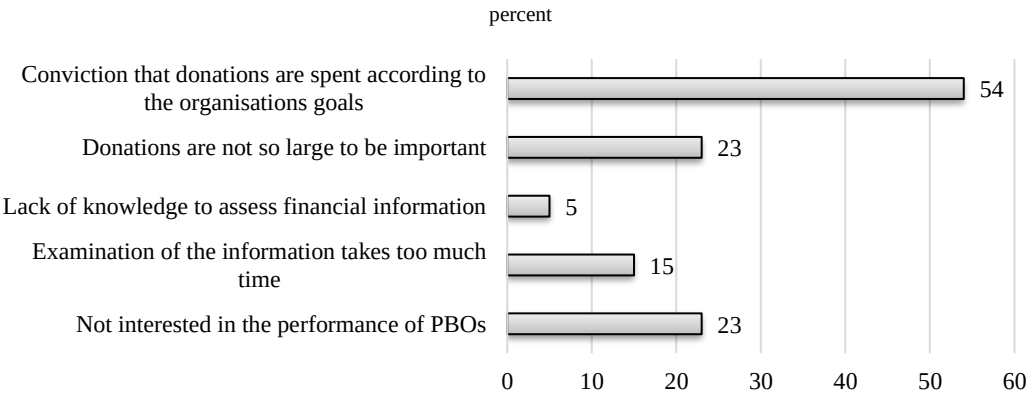

Fig. 6. Reasons of not using financial information by the respondents
(Source: authors’ construction based on survey data, *n*=39)

The respondents who indicated they did not use financial information were requested to reveal the reasons for it. Of the total 39 respondents, 54 percent indicated they trusted in the organisations and therefore did not see a need to get insight into this kind of information. The second most frequent reply was the fact that the financial assistance provided was not so significant and, therefore, it was not important to get insight into the performance aspects of the organisation; such a reply was given

by nine respondents (Fig. 6). The same number of respondents replied they were not interested in the performance of PBOs. Totally, seven respondents gave two or more answers.

The questionnaire requested the respondents to indicate whether, in their opinion, data on donations received and spent have to be publicly available. The survey revealed that 92 respondents (79.31 percent of the total 116 respondents) indicated that, in their opinion, such information had to be freely available. A negative reply was given by 7 respondents or 6.03 percent of the total respondents. The rest of the respondents were not sure and chose the reply 'do not know'. The proportion of affirmative replies convincingly shows that most of the respondents believed that such information had to be freely available, which was consistent with the authors' opinion.

Conclusions

In Latvia, the financial performance of PBOs is considered to be formally transparent, relying on the initiative of the PBOs themselves to disclose their financial information. In contrast, in other European countries, the situation with the public availability of PBO financial information is considerably better in relation to its users, as solutions are found as to how to make the information freely available.

PBOs in Latvia view financial reporting with caution, and in most cases they are not convinced of the need for disclosing their financial information in detail.

The examination of PBO websites by the authors allowed concluding that less than half of the total PBOs had a website or web page in social media. However, the PBOs that had a website, thereby communicating with the public, preferred not to make their financial reports or some parts of the reports, their performance reports or other financial information publicly available. For this reason, the PBO initiative in the disclosure of their financial information could be rated as low.

However, the public as the recipient of PBO services and the PBO supporter believe that such information has to be freely available, even though the interest in it is not unambiguous.

In view of the insufficient availability of financial information in the country and the low activity of PBOs themselves in voluntarily disclosing their financial information on their websites, it is necessary to carry out activities that either supplement free-access information resources and/or motivate the organisations themselves to provide free access to such information.

The Civic Alliance of Latvia should take steps aimed at educating PBOs, popularising and explaining the role of feedback as well as best practices as a component needed to build the trust of the public in the PBOs.

In view of the practices of other European countries, the Ministry of Finance has to consider the need to incorporate a requirement into the PBO Law for PBOs to disclose their annual financial and performance reports on their websites or in another similar way, thereby contributing to the transparency and accountability of PBOs towards the public.

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COOPERATION OR CONFLICT? THE NATURE OF THE COLLABORATION OF MARKETING AND SALES ORGANIZATIONAL UNITS

Anikó Kelemen-Erdős[1], Adél Molnár[2]

[1] *Óbuda University, Budapest, Hungary, kelemen.aniko@kgk.uni-obuda.hu*

[2] *Óbuda University, Budapest, Hungary, molnar.adel.ma@gmail.com*

Abstract

Research purpose. The marketing and sales activity of a company can involve synergy, and coordinated operations can contribute to the success of the enterprise. However, the operations of the former departments often rely on individual successes, which boost conflicts of interest and hinder collaboration. The main aim of the research described in this paper is to explore the areas and focal points of collaboration and conflict in order to highlight the tools that can contribute to enhancing alignment and effectiveness. A further goal is to examine the relationship between marketing and sales and their appraisal of each other.

Design/Methodology/Approach. The empirical research applied three qualitative focus group interviews among marketing and sales employees in different positions at multinational enterprises. Results are analyzed using grounded theory methodology.

Findings. The research highlights the process interfaces between marketing and sales activities and results in the identification of the competence and attitude gaps in their cooperation. Marketing is an entire corporate function, although without knowledge of customers and markets and experience of sales it is unable to foster the innovation processes which, along with cost and time management, result in "efficient and effective corporate operations" as the core category of grounded theory. The outcomes presented here are novel in relation to how they highlight that collaboration should be grounded on clearly defined corporate targets and the engagement of employees with these, as well as supportive and reinforcing manager–subordinate relationships. However, the prioritization and appraisal of the departments of organizational units appears to be dependent on the position and information coverage of employees. Having more information increases the latter's ability to better evaluate other fields of business. In addition to these issues, the explored discrepancies refer mainly to the information transfer process, suggesting that the external and internal accessibility and availability of information to departments is crucial. Information that is accompanied by accurate predictions about market demand and local needs adjustment enables successful innovation and helps create marketable, innovative, well-differentiated, high-quality, valuable products, the availability of (and customer responses to) which is required for the successful performance of a company. The former may be delivered through the contribution of both organizational units. Building and reinforcing human relationships can facilitate these processes.

Originality/Value/Practical implications. In comparison to other research on this topic, the present study applies focus group interviews as a novel method to create a deeper and more thorough picture of the related processes. The model which emerges from the analysis of results highlights problems with practical management that can contribute to the development of a more efficient management system. Employees can be trained to decrease the identified discrepancies, while rewarding positive attitudes to collaboration contributes to their alignment.

Keywords: Corporate performance; Organizational behavior; Marketing and sales collaboration; Sales and marketing interface; Grounded theory.

JEL codes: D23; L20; M30.

Introduction

The classic structure of an organization includes departments of marketing and sales. However, the weight of these fields among all company functions is different. Marketing-oriented companies allocate marketing tasks to all organizational units, whereas (less widespread) sales-oriented companies subordinate marketing to sales. Thus, conflicts may emerge because of such imbalances, while the related departments are often more interested in their own market success than the company's. Such disagreement can be so serious that it is often defined as "war" (among others,

Kotler *et al.*, 2006, Johnson & Boeing, 2016). Accordingly, marketing specialists should endeavor to enhance their connection to salespeople.

At micro and small enterprises, marketing and sales are not separate departments and, in certain cases, can involve only one employee. In spite of the quantity of information about the operation of these areas, there are still shortcomings with such collaboration. Nevertheless, company success is determined by their performance, and synergy created by closer cooperation may contribute to raising overall effectiveness. The efficiency of organizational units is typically measured on an individual basis, rather than as an integrated function, but greater collaboration may create a more innovative system in which profit can be increased. However, practical solutions and thus the related mechanisms of application differ significantly depending on internal and external factors such as the features of the market and company (Homburg *et al.*, 2017).

The aim of the research described in this paper is to highlight potential internal organization- and process-related factors and fields of marketing and sales cooperation that may enhance the effectiveness of enterprises. A further target is to explore the nature of their relationship at multinational enterprises. The focus on multinational companies enables the wider generalization of results, although cultural differences may exist.

Following a secondary comparative analysis, a conceptual model of routine (daily) activities is constructed whereby the cycles in which both organizational units should simultaneously exist or cooperate are emphasized. On the basis of this model, we inquired of professionals using expert focus groups about potentially problematic areas and the points at which the knowledge of other departments should be integrated. This research problem is commonly referred to and has been the subject of many doctoral dissertations, such as those of Micevski (2015), Kelly (2017), and Watson (2017).

The present research accords with the interest of companies because it can contribute to developing their operations, not only in terms of productivity, but also in terms of fostering a positive shift in social relationships. In addition to such forward-looking changes, it is important to identify hindering factors which the company can overcome to improve its potential for development. However, the unpredictability of human factors involves the danger that such forms of cooperation will be opposed or, in the worst case, lead to the intensification of internal competition.

Literature Review

According to Homburg *et al.* (2017), more than 68 percent of managers find that the collaboration of marketing and sales is crucial in research and development throughout the new-product development process. However, Ernst *et al.* (2010) investigated foremost the relationship between marketing and sales as a cross-functional area in relation to innovation-based procedures. The authors describe cross-functionality in two dimensions: behavior (in terms of the method and intensity of knowledge interfaces) and the attitude toward a common vision and targets among participating departments. Micevski (2015) supports the relevance of such cross-functionality and stresses the role of management in overseeing the relevant interfaces. This study attempts to determine those internal corporate factors that may be the basis of a fruitful collaboration.

Following an investigation of marketing and sales functions, Homburg and Jensen (2007) point out that long-term strategies and thinking of marketing in terms of market segments create a distance from the customer, which is why a short-term, direct focus on customers (i.e., market-linked sales) can provide valuable information for use in organizational processes. How companies and customers get in touch with each other and whether and how they communicate and react (the so-called sensemaking) can be the cause of dysfunctions and turbulence (Malshe *et al.*, 2016). The roots of conflict are located in normative and affective differences in the sales and marketing interface, and its contribution to value creation (Kelly, 2017). In the context of the former, “normative” refers to the diverse aims, opportunities, and experiences of operating and results, whereas “affective” pertains to the variety of insights, views, and opinions.

Perceptions can differ depending on situational and human traits and may hinder preparation for and identification of algorithms for solving interactivity-based problems. However, these are essential for fostering work processes.

Marketing and sales collaboration is dependent on multiple factors, which are summarized in Table 1. Organizational structure and its formalization determine collaboration (Keszey & Katona, 2016). In addition, informal communication processes as well as the company's philosophy and management style can be supportive of the latter. In 2009, the highly innovative Hungarian start-up Prezi was founded, employing a loose, informal atmosphere which supports emerging ideas and collaboration. It now has more than hundred million online users worldwide.

The distinction between marketing and sales as organizational functions is fading as these areas of activity increasingly tend to be integrated (Keszey & Biemans, 2015, Keszely & Katona, 2016, 2017) and the empowerment of sales activity increases the benefit to companies in terms of innovation and efficiency (Keszey & Katona, 2017). The importance of effective collaboration and supporting behavior between organizational units is essential for a company's success (Kotler *et al.,* 2006, Homburg & Jensen, 2007, Ernst *et al.,* 2010, Malshe & Biemans, 2015, Keszey & Biemans, 2015, Keszely & Katona, 2016, Homburg *et al.,* 2017).

Marketing activities are strategic in nature and strive to meet consumer needs. In this strategic process, research and development is supported by collaboration between marketing and sales. Companies cannot be confined by the need for a marketing-oriented process; this approach should be present from the stage of initial ideas to the post-buying process (Kotler *et al.,* 2006, Homburg & Jensen, 2007, Ernst *et al.,* 2010, Homburg *et al.,* 2017). Customer-oriented corporate leadership is a profitable strategy (Kotler *et al.,* 2006, Malshe & Biemans, 2015, Keszey & Katona, 2016), which is why marketing recognizes the importance of sales experience, including knowledge about customers which arises from having a direct connection with them (Kotler *et al.,* 2006, Homburg & Jensen, 2007, Ernst *et al.,* 2010, Malshe & Biemans, 2015, Homburg *et al.,* 2017).

Data about market wants and needs are constantly refreshed, while marketing information collected by sales managers is processed by marketing departments and supplemented with data and research-based information from other sources, so a competitive service and product design is created (Keszey & Katona, 2016).

Information from salespeople is updated and made relevant, as during their activities they may immediately recognize the appearance of demands, although it is important to emphasize that this information becomes valuable only when it is effectively used in product development (Kotler *et al.,* 2006, Keszey & Katona, 2016). The question may arise as to what obstructs data flow when employees pursue a common purpose (i.e., market success). Such obstacles are to be found in the conflict between organizational units and the underestimation of "the other" (Kotler *et al.,* 2006, Malshe & Biemans, 2015, Keszey & Biemans, 2015). By striving to prevent or eliminate these problems, a company can increase its chances of success.

In the modern corporate environment, the cooperation of sales and marketing activities can create competitive advantage and may increase customer satisfaction (Keszey & Biemans, 2015, Keszey & Katona, 2016) and business performance (Le Meunier-FitzHugh & Piercy, 2007). The basis of the marketing and sales relationship is both economic and social in nature (Kotler et al., 2006, Keszey & Biemans, 2015, Keszey & Katona, 2016).

Table 1. Approaches to marketing and sales collaboration (Source: authors' compilation)

Main factors related to marketing and sales collaboration	Kotler, Rackham, and Krishnaswamy (2006)	Homburg and Jensen (2007)	Ernst, Hoyer, and Rübsaamen (2010)	Malshe and Biemans (2015)	Keszey and Biemans (2015)	Homburg et al (2017)
Importance of effective collaboration between organizational units	x	x	x	x	x	x
Importance of sales experience	x	x	x	x		x
Need for marketing throughout the entire innovation process	x	x	x			x
Basis of product development is efficient information sharing	x	x			x	x
Integration of customer competences into processes		x	x			x
Sales and marketing employees are rivals and often underestimate each other	x			x	x	
Customer-centered development resulting in economic advantage	x	x		x		
Cross-functional operation		x	x			x
Relationship between marketing and sales is social and can result in economic benefit	x				x	
Formalization between organizational units					x	
Integration of marketing and sales function					x	
Trust and empowerment of sales manager is beneficial for innovation processes					x	

Secondary sources suggest a few possible solutions to the problem. Salespeople should be incorporated into marketing processes and work together with marketing people. This can improve engagement with customers and the respective experts at the same time (Kotler, 2004). The collaboration of marketing and sales can be supported by creating less hierarchical organizational processes, thus empowering managers, and holding external training for employees which intensifies engagement and connections (Keszely, 2014). Le Meunier-FitzHugh and Piercy (2007) point out that collaboration can be fostered by integrating factors, other enablers, and management methods. Le Meunier-FitzHugh and Piercy (2007) and Watson (2017) conclude, however, that collaboration is not enough: Marketing and sales should be engaged at a higher level, suggesting the better integration of departments. In their framework, integration occurs through communication, regulated business operation, organizational learning, measurement of efficiency, customer orientation, and strategic and marketing planning, whereas decision support systems should also be effective. Le Meunier-FitzHugh and Piercy (2007) add that management can define aligned targets and a vision, which can contribute to cocreation while integrating the resources and competences of marketing and sales. In addition to management support, the authors state that facilitating cross-functional and integrated work processes can foster collaboration. In the case of retailing, trade marketing and category management are toolkits for fostering the alignment of marketing and sales units (Dewsnap & Jobber, 2009).

Methodology

An explanatory qualitative research method was considered appropriate for a closer examination of the collaboration of the fields of marketing and sales. By approaching the topic this way, novel ideas are allowed to contribute to identifying focal areas, problems, and solution agendas. Focus groups support idea generation (Malhotra & Birks 2007), although people behave differently in group circumstances (Kidd & Parshal, 2000) because their attitudes and behavior are influenced by other participants and may converge because of group conformity.

The present research applied expert focus group interviews because experts' opinions represent a relevant sample, thus increasing reliability. Focus groups allow the presentation of conflicting views and opinions and encourage compromises. In spite of the former, focus group results are not representative, although companies sometimes rely on their results (Kotler, 2004). Any identified correlations should be further tested, although generalizability is limited because of the sample size and the sampling method. However, the aim of such research is not to generate exact "answers" but rather "to bring meaning to a situation" (Rabiee, 2004, p. 657).

Focus groups may appear to be easy to arrange, but are characterized by the production of chaotic, diverse, weakly transparent data sets which do not support the analytical process (Kidd & Parshal, 2000, Rabiee, 2004). Even the organization of expert focus groups may encounter difficulties because it is challenging to identify times and locations at which busy managers can come together. This is why mini focus groups were applied in the present research, leaving more space for thought but potentially limiting the variety of answers, already narrowed by the time that was available.

Focus groups have already been applied in research with a similar scope. Karlíãek *et al.* (2014) conducted two focus groups to investigate marketing effectiveness-enhancing opportunities, concluding that departments should be more sympathetic to each other, because anyone can make a mistake.

In order to obtain adequate answers, experienced participants should be invited to participate. Applying Knodel's (1993) concept of common characteristics, which refers to the common traits of constructed groups, three conflict groups were organized to highlight the main conflict areas and potential solutions for marketing and sales departments. In such cases, conflicts may be twofold: Such groups contain participants from both organizational units, potentially increasing intergroup conflict, and may also be diverse in terms of participant age and position which can create intragroup conflict. Intergroup conflict refers to conflict which arises due to the inappropriate interaction of different teams, whereas intragroup conflict occurs in the form of relationship- or task-based conflicts between the members of a group (Rout & Omiko, 2007). In our research, as a break variable (Knodel, 1993),

company affiliation can be defined because the members of the first group worked at the same company, whereas members of the second and third groups were employed at different companies.

In our sample, the first focus group consisted of three women from the same company: a sales manager (46 years old), a marketing manager (31 years old), and a sales assistant (21 years old). The managers had several years of experience, which could have resulted in an asymmetrical situation, but the small company (23 employees) has a positive atmosphere, so interviewees were able to speak freely and enthusiastically about the company's system.

The second group was recruited with respect to company differences in order to minimize the effects of dependency. However, variability in age and gender may have played a more significant role in this group because it included three men and a woman from separate companies: a former chief executive officer and marketing director (72, male), a marketing manager (43, female), a sales manager (32, female), and a sales assistant (21, female). The atmosphere was more neutral in this second focus group, although participants were curious and interested in each other's thoughts.

The third group included five career-starter women with a few years' working experience who were employed at different companies. Their positions were as follows: two marketing assistants (both 23 years old), a saleswoman (27 years old), and two marketing trainees (23 and 25 years old). During the focus group interview, the atmosphere was informal and friendly, although participants noted their dissatisfaction with the working environment.

Cross-validation of the results requires that the outcomes should fit with the theory (Fern, 2001). On one hand, this approach can help with understanding and interpreting findings, but on the other hand, it limits the research framework. For this reason, the research described in this paper applied cross-validation at the beginning of the research and, throughout the analyses, relied on internal validity regarding theoretical constructs. To enhance their relevance, the research questions were based on findings from secondary literature:

K1. How do marketing and sales departments mutually appraise each other?

K2. Which factors can enhance the successful collaboration of marketing and sales in a company?

K3. What difficulties emerge during the information transfer process between marketing and sales?

In order to obtain accurate results, a semistructured guide was used, whereas with some questions the moderator let the conversation flow to obtain deeper understanding of the topic.

Grounded theory was applied as a data analysis method. This approach can contribute to mapping and summarizing the results in a systematic, scientifically accepted way (Glaser & Strauss, 1967, Charmaz, 2006). However, grounded theory was not applied to sampling, but to interviewing. After conducting the interviews, the questions were supplemented by novel ones, allowing theory to emerge. The research process included gathering data from three interviews (the first one lasting 55 minutes, and the second and third both 1 hour and 30 minutes), which resulted in a 12-page transcript. The transcript was coded line by line, then the codes were selected following Miles and Huberman's (1994) suggestions. Codes were classified into subcategories which together created the main category which was defined as "efficient and effective corporate operation." In addition to grounded theory, a few highlighted quotations include narratives which, by providing content, support the findings.

Results

At the beginning of the grounded theory analysis, "marketing and sales collaboration" appeared to be the core category regarding the research aim, but the results also extended beyond the relationship and connection between the two organizational units, and were closely interrelated with the company's performance. This is why "efficient and effective corporate operation" was specified as the broader category.

An important input of the core category which influences the overall performance of the company is the adaptation of the targets of the parent company to the subsidiary company. Gaps may occur in the communication of parent company's targets in spite of cultural differences and discrepancies, which

are strongly related to information delivery and communication retention and often result in dependency.

The appraisal of marketing and sales departments (K1) appears to be dependent on the respondents' position within the company. Employees in managerial positions are more likely to think in terms of achieving common company goals, whereas others are not motivated by this at all, while those in starter positions have no knowledge about such clearly defined targets. Moreover, those who have worked in several areas are able to use experience gained elsewhere to make suggestions for improving the performance of the other department. The broader the picture a person has of a given area, the more the person seems to consider his or her department to be important, and vice versa. Thus, individuals who have more information are better positioned to acknowledge the other work of other units and to evaluate other fields more positively. The nature of often rigid manager–subordinate relationships can be the background to this challenge. In such cases, there is often a lack of support and reinforcement.

The results suggest a consensus that the relationship between the two organizational units is basically supportive and mutually reinforcing. The work of salespeople is supported by well-established marketing activities. This observation refers not just to products or services, but the "selling" of corporate identity and brand equity are considered just as important as selling in a traditional sense: "Sales managers sell products, the marketing manager sells the company," stated a sales assistant. This suggests that marketing maintains and can ground the profitable development of a company through which innovation can occur. The efficiency of product and service distribution can always be improved, and the constant pursuit and development of this is indispensable.

Information flow, an important factor in collaboration (K2), was emphasized by every participant, suggesting that information transfer is considered a highlight of shared activity. The focal points of such information, which were identified as subcategories, can be classified into two main areas: external and internal information, the factors of which are included in Table 2. Both units require access to such information in an appropriate form and at the correct time to support efficient corporate operations. An internal information system can be a platform for information flow. Communication takes place via online surfaces which facilitate its retrieval and storage. However, in reality there is sometimes a lack of information availability.

Both units transmit information to each other and to the decision-making level, and ultimately to leaders. The decision-making role of managers is limited, so they focus on decision-making proposals. Information is collected on the basis of current trends and market situations. Development decisions are tailored to business plans and to marketing and sales strategies.

Table 2. Focus of Information Regarding Marketing and Sales Departments' Relationships (Source: authors' compilation according to focus group feedback)

External information	**Internal information**
Market situation and trend analysis	Forecasts
Consumer demand	Sales data
Competitors' activities	Customer satisfaction measures
Domestic and international innovation	Statistics and statements
Current research findings	Cross-functional activities
Statistics	Announcements
Customer responses (offline and online via social communities)	

The core processes which drive the success of the company are initiatives that sustain integrated marketing and innovation processes at a strategic level, along with sales ideas and support that arises

from personal connections with customers, knowledge, and experience. Cross-functionally and at an operative level, cost and time optimization should be taken into account, the factors of which may promote more efficient and effective corporate operations (Fig. 1). These results confirm previous knowledge about the role of marketing and sales (Homburg & Jensen, 2007, Le Meunier-FitzHugh & Piercy, 2007, Ernst & Hoyer & Rübsaamen, 2010, Homburg *et al.*, 2017).

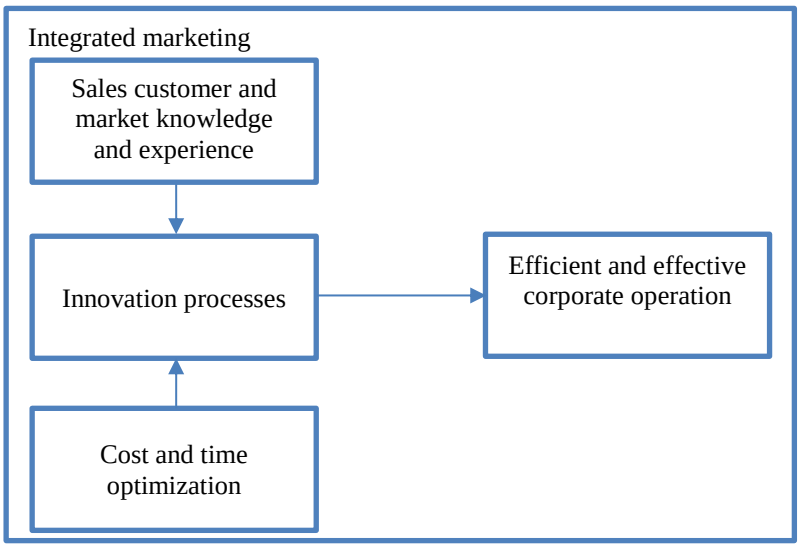

Fig. 1. The role of marketing and sales in efficient and effective corporate operations (Source: authors' construction according to focus group feedback)

Selective coding with grounded theory resulted in the creation of subcategories related to the main category, thus the final grounded theory emerged as depicted in Figure 2. A novel approach is that collaboration should begin with the provision of corporate conditionality, which should rely on embedded corporate targets and employers' engagement to these. Management should support employees to encourage their value creation and contribution. The outcomes can be interpreted in line with the following model of a streamlined new product development cycle:

a. Idea collection and planning phase
b. Production phase
c. Distribution phase
d. Postpurchase phase

Designing research on the basis of needs assessment is the foundation for future success or failure. Products and services are constantly being managed and monitored from conception to after-purchasing customer responses. In the innovation processes, all units should be treated as a single corporate entity: "We strengthen each other, we work together for one purpose, because otherwise it wouldn't work," stated a sales assistant.

In terms of analyzing the role of sales and marketing collaboration at the level of idea gathering, "information dimensions" (external and internal) as the source of innovation and as process support emerged as a subcategory, in which availability and accessibility are considered crucial. Information forms the basis of "accurate market demand predictions," which facilitates competitive advantage. However, "real market trends" and "local needs" should be taken into account, which support sales. In a competitive environment, "innovation constraints" push the company to develop its offerings.

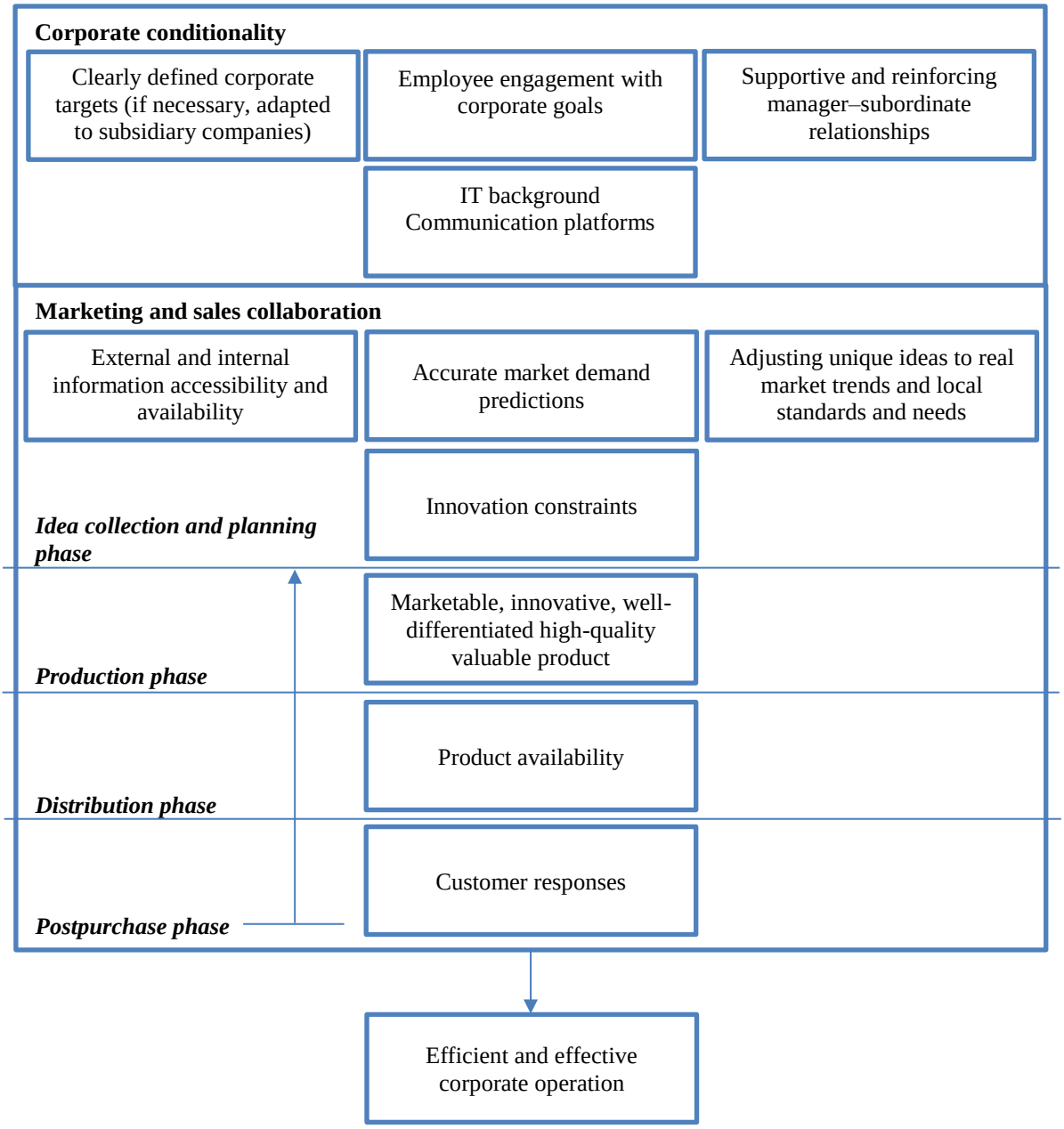

Fig. 2. Areas for the collaboration of marketing and sales for supporting efficient and effective corporate operations: results of grounded theory (Source: authors' construction according to focus groups)

At the production level, considerations such as marketability, innovation potential, and differentiation aligned with high-quality and affordable price can foster the penetration of the product or service. Moreover, distribution should be intensive regarding target-group location. Customer responses may be identified directly as sales, but such valuable information should be shared with marketing departments to support innovation regarding customer needs. At the phase of postpurchase, customer feedback should be used as input information for the development process.

The weak points of collaboration (K3) appear to be a deficient information technology background and communication processes, poor information, misunderstanding of other department- or expert needs, tardiness, or the concealing of information. Despite the planning and road-mapping of activities, failures do occur, for which a scarcity of time is often the reason. "We produce things for the day before yesterday that we just found out today," claimed a marketing manager.

Interviewees from different companies highlighted the fact that a lack of workforce hinders the faster development of their company. Employee fluctuation creates obstacles, even causing collaborative processes to become stuck. Too much emphasis on marketing strategy formation and an impatience for sales may be due to customers' diverse requests.

In many cases, employees do not know much about the complexity of other company areas, so they tend to underestimate the amount of work that takes place in less well-known departments. However, sometimes routine activities and late response to market events are sources of failure. An experienced CEO drew attention to the need to "...learn from mistakes and avoid routine […] There is always something going on and nothing is ever going on exactly according to the plan." Thus, work must be regularly monitored and employees should acknowledge and learn from their mistakes.

Conclusions

The findings described herein can be recommended to organizations in order to enhance their organizational and market performance. The research results reflect the importance of transparent hierarchical structure, coordination, the indispensability of automating support systems, and the market advantage of innovation-centered thinking. With the employment of the right resources, along with technical and technological support, a foundation may be created that fosters information flow, as this is of critical importance to market success.

Improving human relationships can contribute to better understanding and appreciating the knowledge, skills, and capabilities of employees and more positive appraisals of the personalities and work of others and other areas. In case of career starters, mentor programs and the definition of individual development paths linked with rotation can help to boost self-confidence and reinforce self-esteem, which can trigger the integration of the former into the corporation and foster trust in other colleagues. Supportive relationships must be cultivated and maintained to improve overall efficiency. Developing and deepening both personal relationships and social relationships is required for both individuals and groups to achieve success. Employees should be trained to become more open to innovation and teamwork for which creativeness and (sometimes) risk-taking behavior are necessary.

Further research into other departments that use the same analytical method could help to create strategies for the development of the broader organizational system. Only one area should be changed at a time, and only to the extent to which employee and organizational behavior can be modified. Chaotic change processes often result from simultaneous attempts at full-scale reform wherein routine operations change too much, thereby reducing the quality of work that is undertaken.

This study helps with the exploration of efficiency and satisfaction related to marketing and sales. Poorly performing areas and work stages not only raise awareness of the need for development, but also suggest avenues for individual career advancement and, with appropriate assistance, character development for those working in the field. A positive workplace atmosphere, supportive behavior, and respect for employees (even in the form of financial incentives) can result in more effective work that raises commitment.

The findings contribute to the design and development of corporate governance systems. Based on the above considerations, a more comprehensive study could be used to highlight areas of particular importance to the units that would facilitate its personalization, thereby increasing efficiency.

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THE IMPACT OF ACQUISITION ON STOCK VALUE IN CASE OF WARSAW STOCK EXCHANGE

Wojciech Kaczmarczyk

University of Economics in Katowice, 1 Maja street 50, 40-287 Katowice, Poland, wojciech.kaczmarczyk@ue.katowice.pl, ORCID: 0000-0003-2037-2568

Abstract

Research purpose: Seven of 10 companies that have won the Polish Forbes edition Merge & Acquisition 2018 Ranking are listed on Warsaw Stock Exchange. The aim of the conducted research was to test if the biggest acquisitions have an impact on stocks value and is it possible for typical investor to create extra profit by using knowledge of acquisition based on public information.

Design/Methodology/Approach: Using data from Warsaw Stock Exchange (quotations), typical measures such as rate of return, standard deviation (risk), correlation and transaction volume changes were calculated. Each of the case results obtained for the company was compared with the result for stock market indexes: WIG (*Warszawski Indeks Giełdowy* – main WSE index), WIG20 (WSE sub-index of the 20 largest companies), mWIG40 (WSE sub-index of 40 medium companies) and sWIG80 (WSE sub-index of 80 small companies). In addition, the outcomes were confronted with public news (from WSE Electronic System for Information Transfer).

Findings: Conducted research has shown that generally successful finalisation of acquisition results in changes of stock prices behaviour. Unfortunately, observed reactions were not the same. Acquisitions induced both increases and decreases in stock prices; there was also no rule in case of risk change. Generally, acquisitions and merges had rather good influence in banking sector (which is still concentrating), but there was no common reaction in other sectors.

Originality/Value/Practical Implications: The results will be useful for investors acting on Warsaw Stock Exchange, especially for individual investor who are not able to carry out detailed analyses. The research provides results including possible pre-effects and after-effects of making big acquisition by a large company. The negative market reactions were also shown.

Keywords: Stock; Acquisition; Investments.

JEL codes: G11; G12; G34.

Introduction

The influence of information on asset's prices is an important issue for investors acting on stock exchanges, especially those who are focused on fundamental analysis methods (both in a classical and behavioural sense). It is well known that it is possible (and easy) to obtain enormous profits by using unpublic information (known only by insiders), but this kind of behaviour is illegal and unavailable for typical investors.

Therefore, investors are especially interested if it is also possible to gain an extraordinary profit by using just public information (published by the company or in press). Possibility of successful in using such information will be not only a great opportunity for the typical investor but also will prove that there is a lack of efficient on the capital market. Not so often the capital market in Poland provides data, which is useful whilst searching for a solution in this case.

Over the past years, the number of large mergers and acquisitions made by Polish enterprises has definitely increased. Most of them are listed on Warsaw Stock Exchange (WSE) – actually 7 of 10 companies from Polish Forbes edition Merge & Acquisition 2018 are listed on WSE. The purpose of the research is to determine the impact of the acquisition process on stock quotes. In addition, the impact of acquisitions on the stock valuation in case of polish Stock Exchange is not well-described in the scientific literature.

As it was mentioned above, the main aim of the research presented in this article was to test if the process of planned acquisition and its final realisation has a real and predictable impact on companies share's price. Three hypotheses were put forward: (1) there is a visible difference between share's prices behaviour before and after the acquisition, (2) influence of acquisition on share's prices is similar in case of all companies and (3) after publishing official information about finalising acquisition share's prices are averagely rising.

On the basis of share's closing prices (or index's closing values), quantitative methods were used, especially by computing measures such as logarithmical daily rate of return, standard deviation, Pearson correlation and average level of transaction volume. The results were calculated for the first day and then for 10th, 21st, 42nd and 126th days before and after acquisition periods (standard 2 weeks and 1, 2 and 6 months on WSE). The outcomes for companies were compared with WIG index and appropriate sub-indexes.

Conducted research had proven that there was a significant impact of announcing the acquisitions on share's values, but unfortunately, there were no typical pattern of observed changes. Consequently, research did not lead to finding any universal solution that can be applied by investors acting on Polish capital market but proved that not all kind of information is reflected in stock prices.

Literature Review

The problem of information impact on the stock exchange was described in detail by Fama in his Theory of Efficient Markets (1970). Generally, market can be characterised by strong, semi-strong and weak efficiency. On the strong efficient market, all kind of information (even unpublic) is fully reflected in assets pricing (Shefrin, 2005 cited in Zielonka, 2008, p. 32); on semi-strong efficient market, only public information is contained in share's price; and on weak efficient market, it is possible to gain extra profit even by using public information. The detailed history of efficient market theory was gathered by Sewell (2011).

Theoretical problems of market efficient and information impact are rather well described in Polish literature – especially by Zielonka (2004, 2008) or Babula and Blajer-Gołębiewska (2008) – but there is a visible need for practice works focused on Polish capital market (especially WSE).

It is necessary to mention further work of Blajer-Gołębiewska focused on the information asymmetry in corporate governance systems (2010), but research is focused on using information by listed companies, not by investors. Research made by Strzelczyk showed that transaction made by insiders had no visible impact on share's prices (2013*).* In addition, research conducted by Kaczmarczyk proved that acting on unpublic information by insiders was clearly visible in case of GetBack S.A. (2018).

Theoretical aspects of merges and acquisitions are also well described in Polish science, one of the newest is work made by Kozłowska-Makoś (2016), but the list of practical works is much shorter. Studies focused directly on the impact of fusions and acquisitions on share's prices were conducted by Czerwonka, who showed that, in short term, information about fusion averagely results in increasing of price but this the phenomenon is not visible in longer term (2010).

Maćkowiak was also analysing the impact of mergers and acquisitions on value of companies in Poland, but her work wasn't focused on share's price (2012). There is also an interesting work in which impact of mergers and acquisitions on share's price is checked in view of behavioural finance – as a result, higher impact was observed in case of nominally cheaper shares (Biegańska *et al.,* 2016).

Kyriazopoulos (2016) analysed the impact of M&A (Mergers and Acquisitions) taken in Eastern Europe in the banking sector both on stock of bidders and targets – about 23% of the M&A included in his research took place in Poland. As a result, it was found that above-average returns were achieved exclusively by objectives (application is for all the countries of Eastern Europe).

There are also a few actual works focused on the impact on acquired companies. Sharma and Raat (2016) focused on the impact of acquisitions of companies in Eastern Europe made by companies from Western Europe – an increase in the value of acquiring companies was noticed. Nowiński (2017)

instead focused on the impact of acquisitions made by Polish companies abroad. His studies showed that the value of acquiring companies was in average increasing, especially in the case of companies that were making an international acquisition for the first time. Generally, similar results were obtained by Norbäck and Persson (2019) whose research was focused on acquisitions made by MNEs (MultiNational Enterprises) in emerging markets, but they additionally confirmed that there is a relationship between takeover risk and share price increase.

On the other hand, Asygnier (2018) focused on the impact of changing the company's name on the valuation of the company on WSE (change of name is often the result of a merger or acquisition). In average, the value was increasing before and falling after changing the name. Also, a study of the relation between block trades and stock prices proved that M&A should potentially result in increasing stock value (Byrka-Kita *et al.* 2018*).*

Methodology

On the basis of the Polish Forbes edition Merge & Acquisition 2018 Ranking (Karnaszewski, 2019) and official companies communicates (WSE Electronic System for Information Transfer), the list of biggest acquisitions taken by Polish companies listed on the WSE was specified. The day in which company published official information was chosen as the date of acquisitions.

Then quantitative methods were used. The complete database of stock exchange quotations from the analysed period was used (the entire population). On the basis of the closing prices, rates of return and typical measures were calculated for the following time periods:

- before and after 10 days from acquisition (standard 2 weeks on WSE),
- before and after 21 days from acquisition (standard month on WSE),
- before and after 42 days from acquisition (standard 2 months on WSE),
- before and after 126 days from acquisition (standard 6 months on WSE, calculations were made on 19 February 2019; therefore, in some cases, this period was ending on this date).

The logarithmic daily rate of return (1) was used basing on the following formula:

$$r = ln\left(\frac{P_{t+1}}{P_t}\right) \qquad (1)$$

where

P_t is the price in first period;
P_{t+1} is the price in next period.

On the basis of the logarithmic daily rates of return, measures such as standard deviation (2) and Pearson correlation (3) with WIG index (it was assumed that there is a linear relationship between share's prices and index's values) were calculated. The Pearson correlation was calculated based on population (all events of the period), so it was not necessary to study its significance. Santander Bank and AmRest Holding were not quoted at every stock day, so correlations were calculated only for the rest of companies. Formulas are presented as follows:

$$\sigma = \sqrt{\frac{\sum_{t=1}^{N}(r_t - r_a)^2}{N}} \qquad (2)$$

where

N is the population;
r_t is the rate of return in *t* period;
r_a is the average rate of return.

$$\rho_{12} = \frac{\sum_{t=1}^{N}[r_{t1} - \bar{r}_{t1}][r_{t2} - \bar{r}_{t2})]}{\sqrt{\sum_{t=1}^{N}[r_{t1} - \bar{r}_{t1})]^2 \sum_{t=1}^{N}[r_{t2} - \bar{r}_{t2}]^2}} \qquad (3)$$

where

N is the population;
r_{t1} is the rate of return of first asset in *t* period;
r_{t2} is the rate of return of second asset in *t* period;
$\bar{r}_{t1}$ is the average rate of return of first asset in *t* period;
$\bar{r}_{t2}$ is the average rate of return of second asset in *t* period.

At least the average levels of transaction volume were calculated in every period for each company. The results obtained for companies were additionally compared with WIG index (in every case) and WIG20, mWIG40 and sWIG80 sub-indexes (companies were compared with appropriate sub-index), which limited the impact of the entire market on the result of research.

Results

As it was already mentioned, the study focused on companies that made the largest acquisitions in 2018 (based on Polish Forbes edition Merge & Acquisition 2018). Basic information about them is presented in Table 1.

Table 1. Acquisition from Polish Forbes edition Merge & Acquisition 2018 Ranking made by companies listed on Warsaw Stock Exchange (Source: author's own work based on Karnaszewski, 2018 and ESPI data)

Rank	Company	Target	Publication date (finalising)	Transaction value (millions PLN)
1	PKN Orlen	Unipetrol	1 October 2018	4,180
2	Bank BGŻ BNP Paribas	Raiffeisen Polbank	10 April 2018	3,250
3	Bank Millennium	Eurobank	5 November 2018	1,833
5	Santander Bank	Deutsche Bank Polska	8 November 2018	1,290
6	Cyfrowy Polsat	Netia	22 May 2018	1,277
9	AmRest Holdings	Sushi Shop Group	27 July 2018	1,076
10	Grupa Azoty	COMPO Export	6 September 2018	1,011

Daily rates of return on day when information about acquisitions had been published (or in the case when it had been published after stock hours on next stock day) were in the range from −5.75% (Grupa Azoty) to 1.67% (PKN Orlen), −1.89% on an average. Positive rates of return were noticed only in case of PKN Orlen and Santander Bank (0.35%).

Average transaction volume was calculated for every company in each time period. The results are shown in Table 2. In the case of Bank BGŻ BNP Paribas, which had rather very low liquidity, and AmRest Holdings, there was no noticeable impact of the acquisition on transaction volume (it was necessary to take into account split 1:10 made on 3 October 2018).

Table 2. Average daily transaction volume (number of shares sold) (Source: author's compilation)

	PKN Orlen	Bank BGŻ BNP Paribas	Bank Millennium	Santander Bank	Cyfrowy Polsat	AmRest Holdings	Grupa Azoty
10 days							
Before	1,603,037	65	620,221	1,285	488,072	9,525	57,425
After	892,783	63	1,393,026	308	675,223	9,552	106,766
21 days							
Before	1,237,713	65	588,853	884	422,695	6,562	54,557
After	889,680	66	1,410,665	220	1,019,229	6,777	156,188
42 days							
Before	966,618	65	934,142	558	453,866	7,812	43,813
After	878,880	66	1,235,211	336	737,088	11,193	185,490
126 days							
Before	790,492	66	758,493	5,489	486,309	12,445	51,177
After	864,289	57	955,690	773	554,753	10 ,710*	220,268

* Calculation with splits included.

In case of PKN Orlen and Santander Bank, there was a noticeable increase in the transaction volume before finalising acquisitions (for Santander, it was 1,285 before versus 308 after the acquisition). Assets of Bank Millennium, Cyfrowy Polsat and Grupa Azoty were behaving in the opposite way – the daily transaction volume significantly increases after publishing information about taken acquisition. In the case of these companies, the impact of acquisition on the average volume was significantly visible.

Pearson correlation values with WIG index were calculated only for 5 companies (Santander Bank and AmRest Holding had to low liquidity – transactions were not made on every stock day); the results are presented in Table 3.

Table 3. Values of Pearson correlation with WIG index (Source: author's compilation)

	PKN Orlen	**Bank BGŻ BNP Paribas**	**Bank Millennium**	**Cyfrowy Polsat**	**Grupa Azoty**
10 days					
Before	−0.045	−0.033	0.627	0.066	0.424
After	0.683	0.069	0.397	0.277	0.609
21 days					
Before	−0.109	−0.302	0.608	0.159	0.461
After	0.714	−0.093	0.352	0.233	0.668
42 days					
Before	0.226	−0.034	0.573	0.201	0.356
After	0.638	−0.072	0.508	0.362	0.402
126 days					
Before	0.535	−0.040	0.610	0.249	0.331
After	0.633	0.083	0.577	0.232	0.403

In most cases, there was a clearly visible phenomenon of lower correlation values in time periods before than after acquisition, which was especially visible on PKN Orlen's assets. It needs to be highlighted that the WIG index portfolio in 9.29% consists of PKN Orlen's shares, so negative values of correlation were not expected. The only exception was noticed in case of Bank Millennium where the correlation values were much higher during before periods. The phenomenon was noticeable particularly in 2-week and 1-month periods and was disappearing in the longest, 6-month period.

Computing average rates of return and standard deviations for each company brought more detailed data. The results calculated for PKN Orlen are presented in Table 4.

Table 4. Average daily rates of return and standard deviations – PKN Orlen (Source: author's compilation)

	PKN Orlen		**WIG**		**WIG20**	
Rate of return on the first day		1.67%		−1.08%		−1.30%
	average rate of return	standard deviation	average rate of return	standard deviation	average rate of return	standard deviation
10 days						
before	−0.18%	1.80%	0.43%	0.59%	0.42%	0.62%
after	−0.54%	2.13%	−0.49%	0.94%	−0.52%	1.19%
21 days						
before	0.10%	1.80%	−0.14%	0.83%	−0.15%	0.91%
after	−0.64%	2.27%	−0.43%	0.97%	−0.44%	1.24%
42 days						
before	0.21%	1.78%	−0.00%	0.93%	0.02%	1.13%
after	0.23%	2.31%	−0.05%	1.10%	−0.01%	1.35%
126 days						
before	0.13%	2.08%	0.01%	0.89%	0.03%	1.13%
after	−0.01%	2.12%	−0.00%	1.03%	0.00%	1.23%

The acquisition had resulted in a positive rate of return on the first day (publication day) despite the whole market condition (both WIG and WIG20 indexes lost their value). Surprisingly, standard deviation had higher values in periods after acquisition (which seems to contradict the obtained correlation results). Visible grown of standard deviation in case of WIG index and WIG20 sub-index was in some part rather a result of high participation of PKN Orlen in their portfolio. Comparison with indexes shows that the acquisition had rather no impact on the average daily rates of return.

The results obtained for Bank BGŻ BNP Paribas are presented in Table 5. On the first day, price of BGŻ had decreased despite small growth visible on WSE indexes. Higher values of standard deviation were observed before finalising the acquisition.

Table 5. Average daily rates of return and standard deviations – Bank BGŻ BNP Paribas (Source: author's compilation)

	Bank BGŻ BNP Paribas		WIG		sWIG80	
Rate of return on the first day	−1.65%		0.27%		0.40%	
	average rate of return	standard deviation	average rate of return	standard deviation	average rate of return	standard deviation
10 days						
before	−0.58%	2.22%	−0.19%	0.99%	−0.05%	0.54%
after	0.69%	1.67%	−0.03%	0.52%	−0.19%	0.32%
21 days						
before	−0.52%	1.99%	−0.11%	1.00%	−0.03%	0.46%
after	0.51%	1.45%	0.08%	0.74%	−0.11%	0.41%
42 days						
before	−0.22%	2.32%	−0.19%	1.02%	−0.07%	0.64%
after	0.11%	1.25%	−0.03%	0.80%	−0.13%	0.43%
126 days						
before	−0.07%	1.94%	−0.06%	0.83%	−0.03%	0.56%
after	−0.22%	3.04%	−0.02%	0.88%	−0.18%	0.55%

In addition, after acquisition, the average daily rates of return had increased, especially during the first month after the information was published (from −0.58% to 0.69% in 2-week period and from −0.52 to 0.51% in 1-month period) whilst sub-index sWIG80 had lost its value. The observed effect had ended in longest period (average rates of return had fallen and standard deviation had increased).

Data computed in case of Bank Millennium are presented in Table 6. Prices of Millennium's assets behaved in a similar way as in case of BGŻ. On the first day, rate of return was negative in contrast to changes observed in case of WSE indexes. The average daily rates of return were significantly higher in after acquisition time periods (change from −0.14% to 0.45% per day in 2-week period). There was no visible trend in changing of standard deviation's value (increase in 2-week period and decrease in 1-month period).

Table 6. Average daily rates of return and standard deviations – Bank Millennium (Source: author's compilation)

	Bank Millennium		WIG		mWIG40	
Rate of return on the first day	−0.57%		1.20%		0.32%	
	average rate of return	standard deviation	average rate of return	standard deviation	average rate of return	standard deviation
10 days						
before	−0.14%	1.76%	−0.09%	1.14%	−0.34%	0.88%
after	0.45%	2.60%	−0.18%	1.01%	−0.23%	0.86%
21 days						
before	−0.16%	1.56%	−0.20%	1.13%	−0.32%	0.83%
after	0.27%	1.04%	0.27%	1.07%	0.23%	0.97%
42 days						
before	−0.04%	2.07%	−0.16%	1.00%	−0.19%	0.95%
after	0.04%	2.16%	0.12%	1.15%	0.09%	0.93%
126 days						
before	0.04%	2.08%	−0.04%	0.95%	−0.13%	0.83%
after	−0.01%	2.15%	0.08%	1.00%	0.07%	0.86%

The results calculated for Santander Bank are presented in Table 7. Unlike the previous banks, Santander's assets had a small increase in price on the first day but were losing value in 2-week, 1-month and 2-month periods (decrease in the value were stronger than in case of WIG and WIG20 indexes). In the long term, standard deviation decreased (which did not change for WIG and increased for WIG20).

Table 7. Average daily rates of return and standard deviations – Santander Bank (Source: author's compilation)

	Santander Bank		WIG		WIG20	
Rate of return on the first day		0.35%		−1.27%		−1.79%
	average rate of return	standard deviation	average rate of return	standard deviation	average rate of return	standard deviation
10 days						
before	0.59%	3.05%	0.11%	0.69%	0.02%	0.70%
after	−0.97%	3.46%	−0.38%	0.76%	−0.29%	1.36%
21 days						
before	0.14%	4.89%	0.05%	0.94%	−0.06%	0.86%
after	−0.38%	4.10%	−0.22%	0.86%	0.02%	1.49%
42 days						
before	−0.07%	4.71%	−0.10%	0.88%	−0.03%	1.11%
after	−0.40%	3.67%	−0.07%	0.95%	0.02%	1.41%
126 days						
before	−0.15%	3.87%	−0.09%	0.78%	0.01%	1.10%
after	−0.13%	2.69%	−0.01%	0.88%	0.03%	1.26%

Data for Cyfrowy Polsat are presented in Table 8. On the first day, Polsat's assets had lost 2.54% of their value.

Table 8. Average daily rates of return and standard deviations – Cyfrowy Polsat (Source: author's compilation)

	Cyfrowy Polsat		WIG		WIG20	
Rate of return on the first day		−2.54%		−0.54%		−0.87%
	average rate of return	standard deviation	average rate of return	standard deviation	average rate of return	standard deviation
10 days						
before	0.01%	2.55%	0.07%	0.93%	0.14%	1.22%
after	−0.20%	1.72%	−0.04%	0.88%	−0.05%	1.18%
21 days						
before	−0.00%	2.36%	−0.07%	0.85%	−0.08%	1.13%
after	−0.56%	2.42%	−0.23%	0.93%	−0.24%	1.16%
42 days						
before	0.09%	1.94%	−0.07%	0.90%	−0.05%	1.18%
after	−0.17%	2.04%	−0.08%	0.87%	−0.09%	1.11%
126 days						
before	0.03%	1.58%	−0.05%	0.85%	−0.06%	1.08%
after	−0.15%	1.74%	−0.06%	0.96%	−0.04%	1.19%

In addition, average daily rates of return were a bit lower in after the acquisition periods (the observed difference is higher than in case of WIG and WIG20 indexes). Visible changes in standard deviation's value were observed only between before and after acquisition in 2-week period (there was no visible change in further periods).

A significant drop was noticed in case of AmRest Holding (data were presented in Table 9) on the first day when daily rate of return was equal to −4.78%. Average daily rates of return were lower in after periods, but values of WSE indexes were behaving in the same way. There was no visible rule in changes of standard deviation's value.

Table 9. Average daily rates of return and standard deviations – AmRest Holdings (Source: author's compilation)

	AmRest Holdings		WIG		mWIG40	
Rate of return on the first day		−4.78%		−0.37%		−0.04%
	average rate of return	standard deviation	average rate of return	standard deviation	average rate of return	standard deviation
10 days						
before	0.04%	2.21%	0.52%	0.67%	0.25%	0.37%
after	−0.31%	2.06%	−0.17%	1.03%	−0.08%	0.77%
21 days						
before	0.05%	2.15%	0.28%	0.86%	0.09%	0.67%
after	−0.24%	1.53%	0.12%	0.99%	−0.02%	0.65%
42 days						
before	−0.00%	2.13%	0.06%	0.90%	−0.08%	0.74%
after	0.01%	2.67%	−0.02%	0.93%	−0.07%	0.89%
126 days						
before	0.02%	2.38%	−0.09%	0.91%	−0.13%	0.76%
after	−0.11%	2.68%	0.01%	1.02%	−0.05%	0.88%

Even higher drop was observed on the first day in case of Grupa Azoty (results are presented in Table 10). In addition, average daily rates of return were much lower after acquisition (which was not observed in case of WSE indexes). Values of standard deviation had also significantly risen in after acquisition periods (which was again not observed whilst analysing WIG and mWIG40 indexes).

Table 10. Average daily rates of return and standard deviations – Grupa Azoty (Source: author's compilation)

	Grupa Azoty		WIG		mWIG40	
Rate of return on the first day		−5.73%		−0.45%		−1.17%
	average rate of return	standard deviation	average rate of return	standard deviation	average rate of return	standard deviation
10 days						
before	−0.16%	1.87%	−0.08%	0.96%	−0.40%	0.76%
after	−1.32%	4.34%	−0.08%	0.88%	−0.01%	1.14%
21 days						
before	−0.63%	2.60%	−0.07%	1.03%	−0.27%	0.76%
after	−1.23%	3.75%	−0.02%	0.77%	0.05%	0.94%
42 days						
before	−0.40%	2.22%	0.08%	0.92%	−0.10%	0.71%
after	−0.88%	3.76%	−0.07%	0.98%	−0.10%	0.91%
126 days						
before	−0.33%	2.44%	−0.02%	0.91%	−0.11%	0.74%
after	0.20%	3.52%	0.01%	1.00%	0.00%	0.89%

Data presented above show that there was no universal rule for change in the prices after finalising acquisition process. Only in the case of 2 companies, constant grown of their values in after periods was observed (Bank BGŻ BNP Paribas and Millennium Bank). There was also no common behaviour in case of standard deviation's changes.

Gathered data and obtained results turned out to be sufficient to verify all hypotheses. Observed changes in transaction volume level, correlation strength, daily rates of return and standard deviation's values had clearly showed that there is a visible difference between share's prices behaviour before and after the acquisition, so the first hypothesis was verified as true. Moreover, observed changes indicate that the WSE is not a strong efficient market (within meaning of the Fama's theory) – visible movements prove that not all information was included in stock's prices.

Unfortunately, there was no typical rule for observed changes. Companies were acting similarly only in case of changes in the strength of correlation with WSE main index – WIG. For other measures, it was impossible to recognise any kind of pattern. For this reason, the second hypothesis was verified as false – in the case of each company, different reactions were observed.

In addition, share's prices were falling after acquisitions in most of the analysed cases (small increases were observed only in case of two banks, maybe because bank sector in Poland is still concentrating), so the third hypothesis also had to be generally verified as false.

Conclusions

Conducted research showed that there is a relationship between acquisitions and stock's prices, but it is impossible to make extraordinary profit based only on official information about acquisition – even in the case of the biggest companies. The increase in the value of the company after the acquisition, observed in earlier studies, did not occur, which may be related to the size of the companies and transactions. Investors still need to use much more complex analytical tools. On the other hand, research had proven that WSE is not a strong efficient market, because visible differences and changes show that not all information was fully reflected in prices. The above means that searching for methods of using public information is still an interesting topic of research.

Presented data and conclusions can be used by both companies and investors acting on the WSE. It will be potentially useful to expand research by detailed analysis of all official company's statements and press news, which can bring additional explanation of observed phenomena and noticed differences (differences may depend, to a large extent, on the information policy of the analysed companies). In addition, further research may focus only on the analysis of banking sector companies listed on WSE. This direction of research is also justified by the consolidation of the banking sector currently on going in Poland.

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DIGITAL ECONOMY AND SOCIETY: BALTIC STATES IN THE EU CONTEXT

Jevgenija Česnauskė

Kauno Kolegija, Kaunas, Lithuania, jevgenija.cesnauske@go.kauko.lt

Abstract

Research purpose. The high penetration of the Internet and increased level of use of digital devices create conditions for the development of the digital economy and society. Understanding and management of this model are essential whilst seeking to compete in the global market and to ensure a high standard of living for citizens. However, despite the opportunities presented by the digital economy, the Baltic States have not yet fully exploited the potential of digital technologies for sustainable development. The purpose of this research is to assess the progress of the Baltic States towards developing a digital economy and society and to identify areas requiring priority investments and action.

Design/Methodology/Approach. The Digital Economy and Society Index (DESI) published by the European Commission is used to explore the potential of the digital economy. It is an index measuring progress in digital performance through five components: connectivity, human capital, use of internet, integration of digital technology and digital public services. DESI is a crucial tool to reflect the performance of the Baltic States in the context of other European countries.

Findings. The survey shows the individual performance of each Baltic country and compares them amongst themselves as well as with other EU countries. Estonia has the highest DESI when compared with other Baltic countries; however, lower scores in connectivity and integration of digital technology components are observed. Lithuania scores high in the integration of digital technology, whereas the human capital component remains lower. Latvia is a leader amongst connectivity but descents to other Baltic countries in human capital and integration of digital technology components.

Originality/Value/Practical implications. The digital economy remains a widely discussed topic; however, a lack of unanimous scientific definition and detailed research on this economic model complicates understanding of digital technologies. It is essential for each government to analyse the model and focus on the improvement of the digital economy in order to ensure that the country remains digitally competitive in the world.

Keywords: Digital economy; Digital society; Information technology; DESI; Baltic States.

JEL codes: O33; O35.

Introduction

The beginning of the 21st century can be distinguished by the development of advanced digital technologies, the revolution in the information space and the acceleration of economic globalisation processes. Nowadays, the development of information technology plays a major role in society and the economy. A person and society always strive to meet the growing needs in one or another field of activities, whilst the information technology expands the range of opportunities of all individuals, organisations and states.

The information technology has not only changed the models of business and consumer behaviour in the modern economy but also laid the foundation for various processes: high technology-based production and economic activities, development of financial services, changes in education concepts and standards and the digitisation of entertainment and leisure areas. This infrastructure, formed based on the electronic interoperability, is becoming the new direction of the development of global technology, in which the economic activities are based on digital technologies.

The digital economy promotes competition not only within the country but also on a global scale. Therefore, any country seeking to compete in the global market should properly use the potential of the digital economy and promote digital progress. Foreign investors who see the Baltic States as one region are very interested in the progress of all three countries. Thus, it is essential for the Baltic States to properly position their advantages in the global market as well as to identify the areas that need to be improved.

This article aims to perform an analysis of the digital economy progress of the three Baltic States, Estonia, Latvia and Lithuania, in the context of the whole European Union. In order to reach this aim, the following objectives have been set out: to represent the essence of digital economy by highlighting the advantages and risks as well as to assess the digital economy progress level of the three Baltic States in the context of the whole European Union by distinguishing the areas of these countries that need to be improved. The progress of digital economy and society of Baltic States is compared with the average of the European Union in order to assess if the following hypothesis is confirmed: The Baltic States do not fully exploit their potential of digital technologies for the development of economy.

Literature Review

The new society of the 21st century can be viewed as continuously evolving information society, whereas the new economy of the 21st century is the digital global world economy that operates in the medium of the information technology (Morkunienė, 2002). Starting from the 1970s, the ending of the 20th century can be distinguished by a rapid transformation of the whole world because of the penetration of information technologies into everyday life. This transformational process is multidimensional and has unevenly affected various countries. However, it can be stated that, in our days, technology does not determine society: it is a society (Cardoso & Castells, 2006).

The developing digital economy and society are completely different for the traditional models. This new model is not a temporary trend and can impact the competitiveness of a country on a global scale (Parente *et al*., 2017). Thus, the digitisation of the economy is the topicality of these days that impacts almost all areas: those of a human as an individual and of the society.

The concept of digitisation can be used in both the narrow sense and the broad sense. In the narrow sense, digitisation means the transformation of information into a digital form that is convenient in both management and usage. In the broad sense, digitisation is the driving force of the modern life, a modern global tendency of the development of the economy and society that increases the effectiveness of the economy as well as the quality of life (Khalin & Chernova, 2018).

Although, in the scientific literature, the term of digital economy is commonly identified as the web economy, new economy, e-economy and information economy, the term of the digital economy is much broader, covering not only operations in the cyberspace, but it also encompasses the increasing use of information technology in all sectors of the economy and everyday life. Thus, the digital economy can be described as an ability to create added value by taking advantage of the possibilities created by information technology (Bruneckienė, 2014). Namely, the information technology is becoming the most important factor that determines the place of the country in the world and attracts the capital from countries in which there are no such opportunities or the amount of them is not sufficient (Ivanov & Malineckij, 2017).

It is believed that the term ‘digital economy’ dates to 1994. In this year, a book ‘The Digital Economy’ describing the virtual economic system, written by a famous Canadian economist and business consultant Don Tapscott, was published (Tapscott, 1996). Afterwards, in 1995, this term was used by scientist Nicholas Negroponte, who described the ideology of digital economy as a ‘conversion of its atoms to bits’. In addition, he predicted the modern formation of the digital economy and the interconnection of information, interactive and entertainment worlds into a digital network (Negroponte, 1995).

The research on the digital economy model is continued by scientists such as E. Brynjolfsson, B. Kahin, B. Johansson, Ch. Karlsson and R. Stough. During this period, the model of the digital

economy, in which all sectors are transformed because of the impact of information technology, is described more broadly by identifying specific branches of industry: information technologies (IT), e-commerce and services of digital technologies, software production and information processing (Brynjolfsson & Kahin, 2000). When analysing this model, the importance of digital technologies and the Internet penetration level is emphasised not only in the manufacturing but also in the service sector (Johansson *et al.*, 2006).

British economist M. Skilton introduces digital economy as a part of the new digital ecosystem. The digital ecosystem is an interaction of information technologies in the market and business that creates new consumers, determines greater business results and provides a new experience. In the context of this ecosystem, the digital economy is viewed as virtual resources and digital services, creating added value for both the country and individual company (Skilton, 2015).

The Organisation for Economic Co-operation and Development (OECD) states that technologies are the foundation for the rapid digital transformation of society, economy and government. Digital transformation creates changes in the traditional order: new communication channels and means are introduced as well as business innovations, the functioning of business and the governance of states, based on the opportunities provided by the new technologies (OECD, 2017).

The interest in the digital economy is driven by the research of scientists and international organisations, which reveals that information technology is becoming increasingly important in the economic development of all world countries, whilst their integration into all areas of activity is gaining momentum. The high rate of digitisation is determined by its positive impact on the society, business and government that operate through three main mechanisms: *inclusive*, *efficient* and *innovative* (Table 1).

Table 1. Positive effects of digitisation (Source: author's compilation from Digital Dividends, 2016)

	Inclusion	**Efficiency**	**Innovation**
Society	Job opportunities	Labour productivity	Consumer welfare
Businesses	Trade	Capital utilisation	Competition
Governments	Participation	Public sector capability	Voice

Therefore, positive effects of digitisation on the society are the creation of new jobs, greater flexibility of working conditions (remote job positions), work automatisation that increases labour productivity and a broader range of goods and services available to the consumers, allowing to meet their considerable needs. As for business, the digitisation has created new trading markets, makes capital management more effective and profitable as well as promotes competition. Moreover, digitisation allows to include a greater number of residents into public activities at the government level, increases the number of services available to the society and creates conditions for the efficient and transparent work of the state machinery.

Nevertheless, though digitisation has positive effects on economy and society, it can also have a negative effect. In the World Bank Report of 2016, Digital Dividends distinguish these possible negative effects:

- Concentration: business interests of many industry branches, lack of sensible regulation and limited competition of digital platforms.
- Inequality: rapid work automatisation can lead to the disappearance of jobs, increased structural unemployment and growing inequality in society.
- Control: the state and organisations can use digital technologies for the control of citizens and not the development of their opportunities and rights (Digital Dividends, 2016).

These negative effects should be reduced by regulating the activities of business so that the companies could apply the potential provided by the Internet for the increase of competitiveness and innovations; for the development of people's digital literacy that would provide more opportunities to use the advantages of information technologies; and for accountable state institutions that by controlling the use of technologies would improve the welfare of people. Digital technologies can strengthen the impact of these means as well as encourage an accelerated pace of the development of the digital economy and society.

Thus, the digital economy provides opportunities for society, companies and the state to create additional added value, to seek for greater efficiency and to create a welfare state. For this reason, the creation of the digital economy should be one of the essential goals of society and the state. If all the advantages are properly used and risks are managed, any country can achieve good results.

Methodology

As a trend of the modern world economy and society, digitisation has a different impact on separate countries. In order to assess the degree of digitisation of any country, indicators that measure it are used. The Digital Economy and Society Index (DESI) is applied in this research. This index is an online tool to measure the progress of the EU member states towards a digital economy and society (Europe's digital progress report, 2017).

DESI is a composite index measuring progress in digital performance through five components:

- Connectivity dimension measures the deployment of broadband infrastructure and its quality. This dimension is calculated using the five sub-dimensions: fixed broadband, mobile broadband, fast broadband, ultrafast broadband and broadband price index.
- Human capital dimension measures the skills needed to take advantage of the possibilities offered by digital means; it is calculated by using two sub-dimensions: basic skills and usage, and advanced skills and development.
- Use of Internet services by citizens dimension accounts for a variety of online activities, such as the consumption of online content; it is calculated by using three sub-dimensions: content, communication and transactions.
- Integration of digital technology dimension measures the digitalisation of businesses and eCommerce. This dimension is calculated by using two sub-dimensions: business digitization and eCommerce.
- Digital public services dimension measures the digitalisation of public services. Modernisation and digitalisation of public services can lead to efficiency gains for the public administration, citizens and businesses. This dimension focuses on eGovernment and eHealth (DESI indicators, 2018).

Some dimensions are more relevant than others, and for such a reason, they have been given a higher weight in the computation of the final index score of each country. The overall DESI has been calculated as the weighted average of the five main DESI dimensions by this formula:

*DESI = Connectivity * 25% + Human Capital* 25% + Use of Internet *15% + Integration of Digital Technology * 20% + Digital Public Services * 15%*

Connectivity and Human Capital are the key dimensions of the DESI, as they empower and maintain the whole structure of the digital society and economy, as well as its functioning – infrastructure. These dimensions have the greatest weights: 25% each. In the business sector, Integration of Digital Technology is significant for growth and expansion; this dimension has 20% of the total weight. A crucial weight over the Use of Internet Services and Digital Public Services is held by the quality of

infrastructure, as their joint contribution depends on it. These dimensions each have 15% of the total weight (DESI Methodological note, 2018).

The main DESI, its sub-dimensions and individual indicators allow to carry out these types of analysis:

- Performance assessment: assessment of the performance of member states;
- Zooming-in: the identification of areas that need to be improved;
- Follow-up: the observation of progress;
- Comparative analysis: categorisation of member states in order to carry out a complex analysis (DESI Methodological note, 2018).

The study uses the DESI of 2018, which is published on the website of the European Commission. In order to assess the progress of the Baltic States in the overall context of the EU, each country is compared to the average of the 28 countries of the EU.

Results

In the study, the progress analysis of the Baltic States is carried out based on the DESI. The selection of the three Baltic States is conditioned by the fact that, in the context of the European Union, the Baltic States are usually viewed as one region because of their geographical location and similar development level of the economy. Moreover, these countries are also analogous in their history, culture and religion (Hiden & Salmon, 2000; Mole, 2012).

First of all, the ranking of each Baltic State amongst all European countries should be disclosed (Figure 1). The average for all EU member states is also included in the comparison in order to reveal the gap amongst each of the Baltic States and common tendencies.

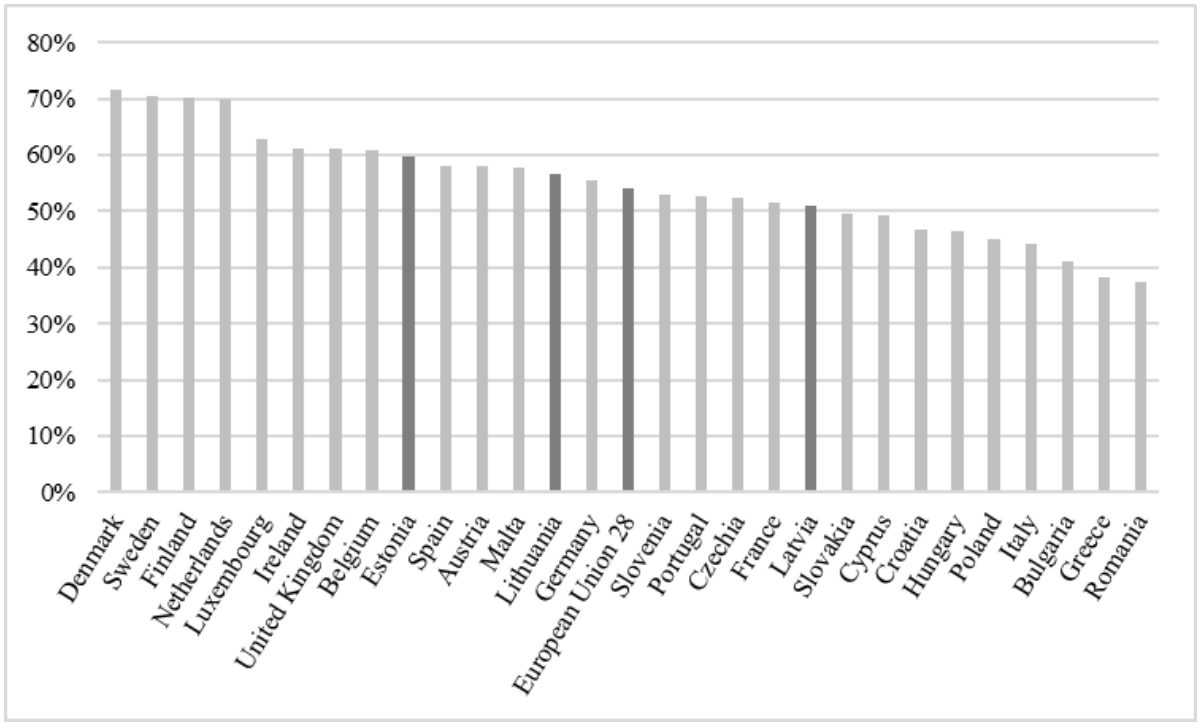

Fig. 1. DESI (Source: DESI, 2018)

According to the presented chart, Estonia has the highest ranking from all three of the Baltic States, based on the DESI. Amongst all the European countries, it is in the ninth place, and its index value is 60%. The DESI value of Lithuania is 57%, and this country ranks 13th amongst the European countries, whereas Latvia has 54% and takes up the 20th place. Estonia and Lithuania are above the

EU average (54%), whilst the value of the Latvian index is lower. Nevertheless, all three Baltic States need to exert themselves with the intention to overtake the leaders of the European Union: Denmark with 72% and Sweden, Finland and Netherlands all have approximately 70% value on the DESI.

The variation in the value of the DESI in the period of 2014–2018 shows the growth tendencies of the Baltic States and their gap when comparing them with each other and the average of the European Union (Figure 2).

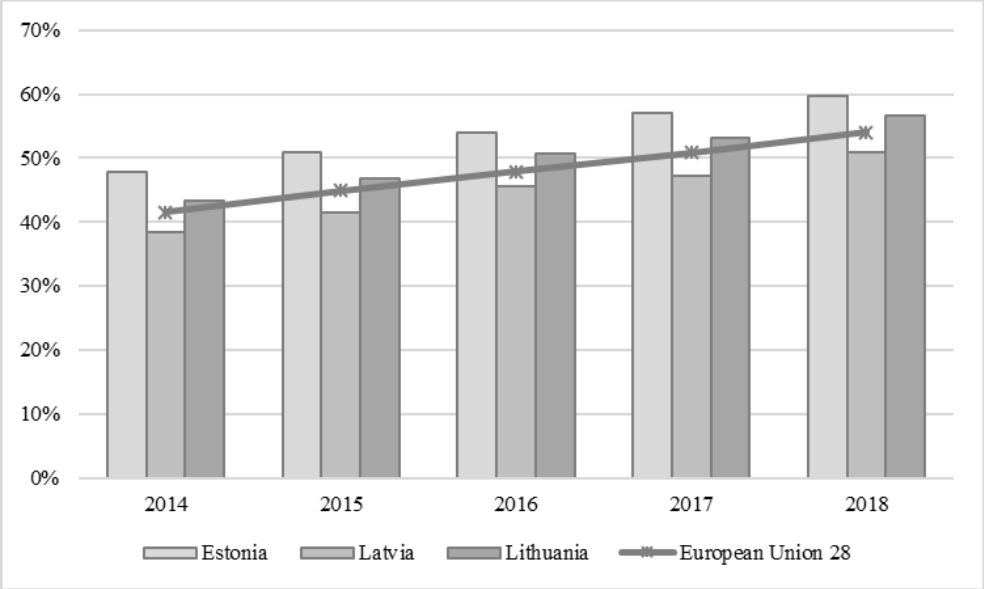

Fig. 2. Change in the DESI in 2014–2018 (Source: DESI, 2018)

During the analysed period, DESI values of all Baltic States increased. Throughout this period, Estonia is the leader according to the value of the index, whilst Lithuania takes the second place. Both countries are above the average of the EU. Meanwhile, Latvia has the lowest DESI value, in comparison with the other Baltic States and with the EU average. The increase in the DESI value was not equivalent during the 5-year period, which was analysed. The index value of Estonia rose steadily by 3% in each year; Lithuania's index value increased by 4%, except for 2017, when the growth slowed down to 2%. Latvia has similar growth trends as Lithuania; nevertheless, its growth in 2017 was even slower and reached only 1%. The EU average grew steadily by 3% each year.

The overall value of the DESI is constituted of the weighted average of five dimensions. When comparing the values of the DESI dimensions amongst the Baltic States and the EU average, advanced and improving areas can be observed (Figure 3).

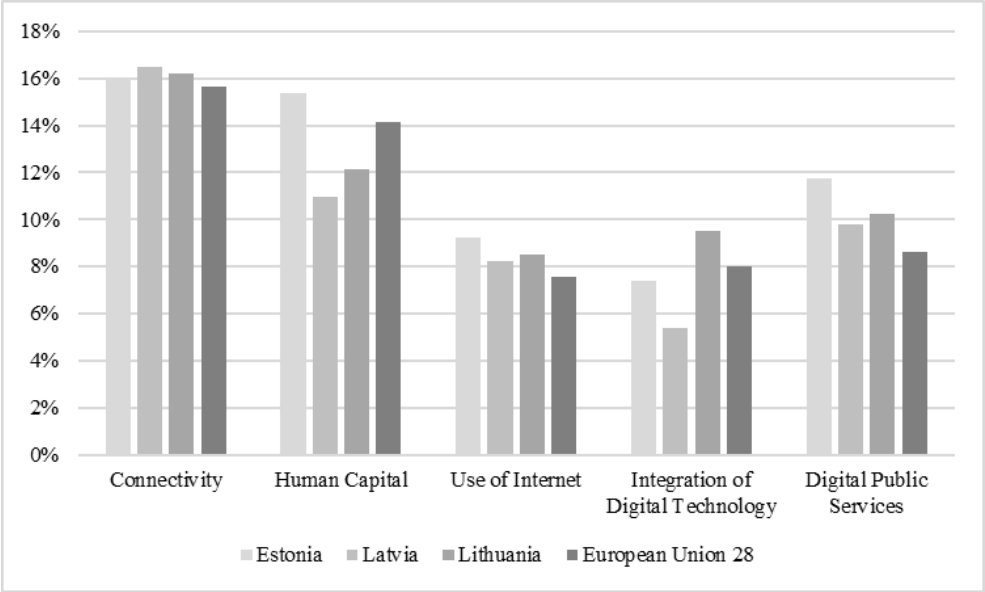

Fig. 3. DESI by dimensions (Source: DESI, 2018)

When comparing the DESI based on the values of different dimensions, it has been determined that according to the Connectivity dimension, all the Baltic States are at an almost identical level and exceeds the EU average. Latvia has the highest value of this dimension (16.48%), whereas Lithuania's and Estonia's values are 16.22% and 16.03%, respectively. Meanwhile, the EU average is 15.64%.

Whilst assessing the values of other dimensions, the differences are more pronounced. According to the value of the Human Capital dimension, Estonia is the leader with 15.34% and is the only Baltic state that exceeds the average of the European Union, which is 14.12%. The value of the Human Capital dimension for Lithuania is 12.13%, whereas that for Latvia is 10.96%. According to the dimension Use of Internet, Estonia also takes up the first place with 9.24%, whilst Lithuania is in the second place with 8.53%; Latvia is quite close to Lithuania with 8.22%. According to the Use of Internet dimension, all three Baltic States surpass the EU average, which is 7.57%. In terms of the Integration of Digital Technology dimension, the highest value belongs to Lithuania, which is 9.49%. This value is higher than the EU average: 8.02%. Values of the other two Baltic States Estonia and Latvia are 7.41% and 5.41%, respectively. According to the Digital Public Services dimension, the highest rank belongs to Estonia, which is 11.72%; Lithuania is not that far behind with 10.23%, whereas the value of this dimension for Latvia is 9.78%. All three Baltic States are above the EU average (8.62%), based on the Digital Public Services dimension.

Summarising the comparison of the Baltic States based on the values of the DESI dimensions, it can be stated that Estonia has the highest values in three of the five dimensions: Human Capital, Use of Internet and Digital Public Services; nevertheless, it should promote progress in the Integration of Digital Technology dimension. Latvia takes the first position in the dimension of Connectivity; however, it should encourage progress in all other dimensions. Lithuania has overtaken other two Baltic States in the Integration of Digital Technology dimension, whereas in other dimensions, it occupies the middle position.

According to the comparison of Baltic States and the average of the European Union, based on the values of the DESI dimensions , it can be stated that the dimensions with higher values reflect the advanced areas of the countries in the overall context of the EU, whereas smaller values indicate the areas that need to be improved (Table 2).

Table 2. Comparison of the values of the DESI dimensions of the Baltic States with the average of the European Union (Source: author's compilation by DESI, 2018)

Country	Above the average of the European Union	Below the average of the European Union
Estonia	Connectivity; Human Capital; Use of Internet; Digital Public Services	Integration of Digital Technology
Latvia	Connectivity; Use of Internet; Digital Public Services	Human Capital; Integration of Digital Technology
Lithuania	Connectivity; Use of Internet; Integration of Digital Technology; Digital Public Services	Human Capital

In order to analyse the problems of the areas that need to be improved in each of the Baltic States, the sub-dimensions of each of the dimension should be analysed.

It is essential for Estonia and Latvia to encourage the progress in the Integration of Digital Technology dimension. Sub-dimensions of this dimension are Business digitisation (60%) and eCommerce (40%); the weight of these sub-dimensions in the overall dimension is 60% and 40%, respectively. The Business digitisation sub-dimension shows the uptake level of digital technologies in the country's companies. The values of the sub-dimension of the Integration of Digital Technology component reveal the specific field for improvement in Estonia and Latvia (Figure 4).

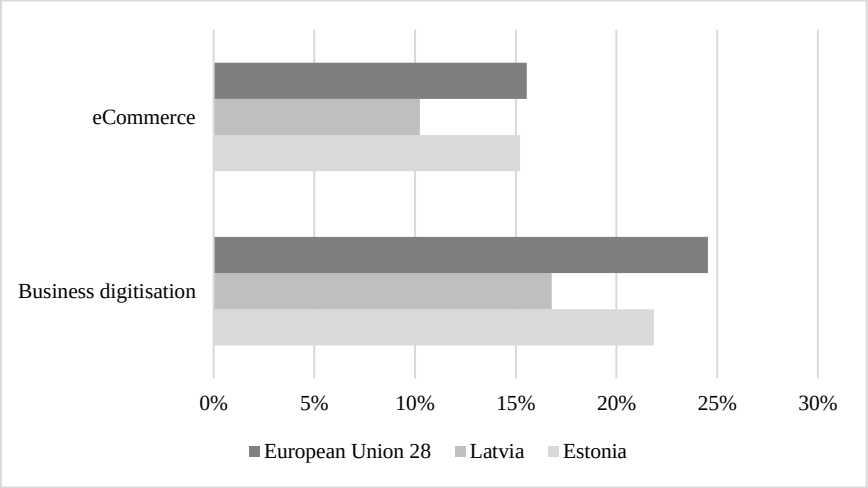

Fig. 4. Comparison of Integration of Digital Technology sub-dimension of Estonia and Latvia with the EU average (Source: DESI, 2018)

Estonia's eCommerce sub-dimension is quite close to the EU average; thus, the focus should be on the strengthening of the elements of Business digitisation sub-dimension. Latvia should concentrate on the development of both sub-dimensions. The strengthening of Business digitisation should focus on five technologies: the electronic sharing of information inside the company, the use of Radio-frequency Identification technologies, the communication through social networks as well as the use of e-invoices and Cloud services (DESI Methodological note, 2018). eCommerce provides opportunities to become a part of a much greater market and produces a higher growth potential; therefore, it is beneficial to promote eCommerce of country's companies in the internal market and the markets of other EU countries.

Latvia, as well as Lithuania, should focus on the strengthening of the elements of the Human Capital dimension. The Human Capital dimension is divided into two sub-dimensions: the Basic Skills and Usage sub-dimension (50%), which indicates general population's level of digital skills, and the Advanced Skills and Development (50%), which is concerned with the personnel and its potential to

preserve and increase the digital economy. The values of Human Capital sub-dimension for Lithuania and Latvia reveal the weakest areas in the EU context (Figure 5).

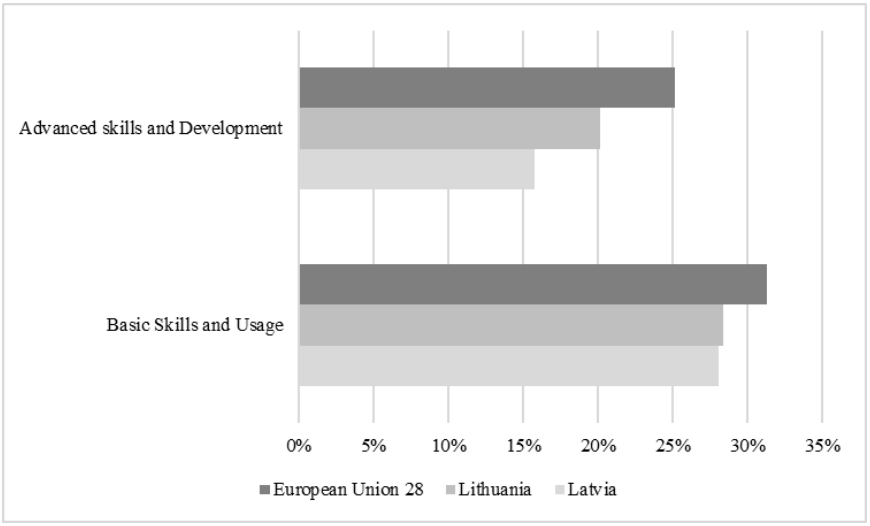

Fig. 5. Comparison of Human Capital sub-dimension of Latvia and Lithuania with the EU average (Source: DESI, 2018)

According to the values of both sub-dimensions, Latvia and Lithuania lag behind the EU average. Thus, both countries should increase the number of regular Internet users as well as residents' computer literacy (Basic Skills and Usage sub-dimension). Digital skills could also help to solve more general problems, as these skills are significant to the digital economy labour market. The strengthening of the digital skills of all residents has a positive impact on the key competencies required in the labour market. When it comes to the Advanced Skills and Development sub-dimension, both countries are facing a serious challenge: to manage the transition from a low-cost, low-tech economy to a proficient economy that is open to skills and innovations.

Conclusions

The digital economy is a rapidly developing model of the economy that is based on the satisfaction of various needs of society and organisations as well as the creation of added value by using digital technologies.

The advantages of this economic model are revealed through three mechanisms: inclusive, efficient and innovative. The inclusive mechanism is displayed by new jobs, a wider commerce market and the inclusion of society into the governance of the state. The effective mechanism is shown through the increase in labour productivity, better capital management and the increased public sector capacity, whereas the innovative mechanism increases the satisfaction of the customers, competition amongst organisations and improves the state's communication with society. However, it is necessary to assess and manage the risks of this economic model, that is, the concentration that requires regulation, the inequality that needs to increase the level of society's digital literacy and control that is diminished by accountability.

By assessing the Baltic States according to their digital progress in the context of the whole European Union, the DESI published by the European Commission is used. On the basis of the DESI, the highest rating from all three Baltic States is acquired by Estonia; it is the 9th amongst all the countries of the European Union. According to the DESI, Lithuania takes the 13th place, whereas Latvia is in the 20th position. The DESI of all three Baltic Countries increased during the period 2014–2018. By comparing it with the average of the European Union, the DESI of Estonia and Lithuania is higher, whilst that of Latvia is lower than the average of the European Union.

By analysing the Baltic States based on the DESI dimensions, it can be concluded that all three countries are advanced in the dimensions of Connectivity, Use of Internet and Digital Public Services. However, in other dimensions, only a little progress is visible in comparison with other EU countries. Estonia and Latvia should promote progress in the dimension of the Integration of Digital Technology by encouraging the level of digital technology inclusion in businesses and by expanding the usage of the eCommerce channel in the country. Latvia, as well as Lithuania, should focus on the strengthening of the Human Capital dimension by increasing the number of regular Internet users and raising the level of computer literacy amongst their citizens. It can be stated that all the Baltic States do not fully use their digital technologies potential for the development of the economy.

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CHANGES IN HOUSING AVAILABILITY INDICATOR IN SELECTED POLISH CITIES IN THE YEARS 2006 TO 2018

Marta Martyniak

University of Economics, Katowice, Poland, marta.martyniak@ue.katowice.pl, ORCID: 0000-0003-2619-9081

Abstract

Research purpose. Housing availability indicator shows the area of residential real estate possible to purchase for the average monthly wage in the enterprise sector. The research carried out in this paper is aimed at determining the current level of housing availability indicator and its detailed analysis, taking into account the dynamics of changes in 2006 to 2018. This analysis will be carried out for primary and secondary market for selected Polish cities.

Design/Methodology/Approach. Calculations were based on the average transaction prices obtained from the transactional database of residential real estate of the National Bank of Poland and the value of the average monthly remuneration in the enterprise sector obtained partly from statistical data and official journals of the Central Statistical Office.

Findings. The analysis shows that the indicator of housing availability in Poland, despite the visible upward trend, is at a very low level, placing Warsaw at the first place. In addition, the extension of the analysis to the division of the housing market into the primary and secondary market provided more information about shaping the housing availability indicator. Whereas in the primary market in individual cities its value was at a similar level, the secondary market was subject to greater fluctuations.

Originality/Value/Practical implications. This paper is of practical nature. Due to the asymmetry of information on the Polish real estate market, especially regarding housing prices, knowledge about the value of the housing availability indicator in Poland may be exceptionally valuable, especially for people interested in the housing market, including individual investors and market practitioners, as an auxiliary source of information in purchasing decisions of households.

Keywords: Housing availability indicator; Real estate market; Housing market.

JEL codes: R20; R31.

Introduction

The most important function of residential real estate for households is to meet housing needs. Not only is an apartment a place to perform basic life activities, but it also creates conditions for the creation of a new social unit which is a family (Kusińska, 2009). It also plays the role of the foundation in satisfying the basic human needs, without which it is impossible to fully satisfy the needs of a higher order (Zalega, 2010). Therefore, issues related to the availability of housing are particularly important in two dimensions: first, households and second, in the context of housing policy of the state.

The housing market in Poland is characterized by asymmetry of information, especially regarding real estate prices. This means that the typical household has a low knowledge about the formation of housing prices, as well as about the dynamics of their changes. Research housing availability index will provide new information about the residential real estate market in Poland. It seems reasonable to adopt a division into the primary and secondary market. So far, literature of the subject in this field is selective and often out of date (no literature references taking into account the latest data). The aim of this paper is to determine the current level of the housing availability indicator and its detailed analysis, taking into account the dynamics of index changes in years 2006 to 2018. The thesis is defined as follows: The secondary market is characterized by a higher housing availability and lower fluctuations in this indicator. The calculations were based on data collected from the Polish National Bank (NBP) and Polish Central Statistical Office (GUS). The analysis shows that there are differences

between the housing availability index in the primary and secondary market. The study also showed discrepancies in the context of individual cities.

Literature Review

The concept of housing availability is differently defined in the literature of the subject. The NBP uses in its analysis the concept of housing availability indicator defined as "a measure of potential availability to purchase housing space at the transaction price for an average wage in the enterprise sector in a particular city. It expresses the number of square metres of housing that can be purchased for an average wage in the enterprise sector in a particular city, at an average transaction price in a particular market" (J. Łaszek et al., 2017). It is a strictly income approach, covering two criteria: average transaction prices and average household income. The disadvantage of this indicator in Poland is that the GUS does not disclose data concerning an average wage in the enterprise sector in a particular city, just only for the whole country. The results will therefore not reflect the exact situation in a particular city, but only an approximate value. However, this indicator is popular in many real estate reports and is simple to use. In addition, even the approximate value of the indicator for individual cities is an important information for households striving to satisfy housing needs.

A similar definition is presented in the AMRON-SARFiN reports as quarterly changes in the availability of housing for an example of a family consisting of two working persons and an older child (2018). Housing availability index can also be calculated as a ratio of household income (or as alternative residual income) and housing expenditures (Radzimski, 2014). In a different perspective, housing availability is "the challenge of living in the future, and its non-housing expenditures, on the other, within the constraints of its income" (Stone, 2006).

These definitions are limited only to the interpretation of the category of income. In the literature of the subject, we can also find a different approach to housing availability in the form of accessible housing construction (reference to the English housing system – affordable housing). This term is determined for three phenomena: apartments or houses located in the housing market, without a price turning point; housing premises for homeless people; apartments or houses for which medium-affluent households can afford, usually financed with some help from the state or municipality (Twardoch, 2009). In this approach, housing availability mainly concerns issues related to the state's housing policy.

In Poland, there is a strong desire to own a residential property. According to the NBP data from 2015, 77.4 percent of households own the main residence, which is one of the highest results compared to EU countries (Narodowy Bank Polski, 2015). Most Polish households are forced to purchase a residential property using a mortgage loan. Accordingly, among the relevant factors measuring housing availability is the interest rate of the central bank. The interest rate is an important criterion for assessing creditworthiness and determines the availability of housing for households with low incomes. Similar features are also met by the availability of loan-financed housing. The availability of housing is also dependent on their current supply and the availability of government programs created to supporting the purchase of residential property (Matel & Marcinkiewicz, 2017). In recent years, several such programs have been created in Poland, and the opinion about them is varied (Gołębiewska & Prokopowicz 2017; Groeger 2016).

The current state of research on the housing availability index in Poland largely represents reports and analysis of the housing market. In the AMRON-SARFiN reports, the housing availability index is presented for data from 2005 to 2018 in the entire Poland, without any division into primary and secondary market (AMRON-SARFiN, 2018). NBP research also does not include such a division (Narodowy Bank Polski, 2015). In both of these studies published quarterly for several years, the housing availability indicator has only information purposes and is not subject to further analysis.

In addition to market analysis, the housing availability index was the subject of research; however, it does not cover a longer period of time. Matel and Marcinkiewicz (2017) analysed housing availability in Polish voivodeship cities only for the year 2015. Radzimski investigated housing availability only for the year 2011, however, in a much broader context - the relationship between the spatial differentiation of subsidized mortgage loans and that of housing affordability. It also indicates that the

housing availability index can be counted in two ways: first, in a similar way as NBP, that is, as salary/housing price index and, second, as household income/housing price index (Radzimski, 2014).

Methodology

This paper adopts the interpretation of the housing availability indicator presented by Łaszek et al. for the NBP. First of all, this indicator is popular in many reports and studies on the real estate market, and second, it is easy to interpret. This means research results will be accessible not only for professionals and real estate market researchers, but also for the average household. Moreover, even the approximate value of the indicator for individual cities is an important information about the situation on the local real estate market. Accordingly, the following formula was adopted for the calculation of the housing availability index:

$$\text{Housing availability} = \frac{\text{average wage in the enterprise sector}}{\text{average transaction price in a particular market}}$$

The higher the score index, the higher the availability of housing for households. In the literature of the subject, there is no interval by which its values can be assigned to low or high. Interpretations should be compared to other values, for example, from a different period or different area.

For the calculation were used the average transaction prices from the seven largest Polish cities (capitals of provinces and Warsaw) obtained from the database of transaction prices of residential real estate of the NBP and the average monthly remuneration in the enterprise sector obtained partly from statistical data of the Polish Central Statistical Office and their official journals.

The calculations were made for the entire set of available data, that is, for the years 2006 to 2018, broken down into primary and secondary market. It was necessary to average the value of the average monthly remuneration in the enterprise sector to quarterly values in order to be able to compare the values of transaction prices and income. The results were presented on an annual basis to help recipients analyse and compare data.

Results

First, the housing availability index was calculated for the selected seven Polish cities: Warszawa (Warsaw) as the capital agglomeration and Gdańsk, Katowice, Kraków (Cracow), Łódź, Poznań, and Wrocław. The largest cities in Poland were chosen because they are considered the most developed. The values of the housing availability index, broken down into the primary and secondary market, are presented in Tables 1 and 2.

Table 1. Housing availability index in the primary market in selected Polish cities in 2006 to 2018 (in m^2) (Source: own calculations)

Year	Gdańsk	Katowice	Cracow	Łódź	Poznań	Warsaw	Wrocław
2006	0.64	0.75	0.39	0.85	0.66	0.46	0.78
2007	0.44	0.58	0.37	0.58	0.45	0.37	0.49
2008	0.47	0.58	0.41	0.61	0.45	0.38	0.59
2009	0.59	0.67	0.47	0.67	0.53	0.44	0.64
2010	0.63	0.70	0.50	0.70	0.53	0.44	0.60
2011	0.65	0.76	0.52	0.73	0.57	0.48	0.61
2012	0.68	0.76	0.57	0.82	0.65	0.55	0.67
2013	0.67	0.79	0.64	0.85	0.64	0.53	0.69
2014	0.69	0.82	0.67	0.87	0.65	0.54	0.68
2015	0.69	0.83	0.67	0.88	0.66	0.55	0.68
2016	0.67	0.85	0.67	0.90	0.68	0.56	0.70
2017	0.68	0.87	0.68	0.91	0.71	0.59	0.71
2018	0.65	0.88	0.70	0.91	0.72	0.58	0.72

Table 2. Housing availability index in the secondary market in selected Polish cities in 2006 to 2018 (in m^2) (Source: own calculations)

Year	Gdańsk	Katowice	Cracow	Łódź	Poznań	Warsaw	Wrocław
2006	0.68	1.30	0.47	1.34	0.75	0.41	0.56
2007	0.51	0.90	0.42	0.76	0.53	0.33	0.47
2008	0.53	0.84	0.48	0.80	0.54	0.36	0.54
2009	0.58	0.94	0.55	0.88	0.63	0.40	0.58
2010	0.60	0.96	0.55	0.88	0.63	0.40	0.57
2011	0.66	1.04	0.57	0.94	0.67	0.46	0.61
2012	0.73	1.11	0.60	1.07	0.72	0.50	0.69
2013	0.78	1.19	0.66	1.12	0.77	0.55	0.76
2014	0.80	1.17	0.68	1.16	0.79	0.54	0.77
2015	0.79	1.19	0.67	1.22	0.82	0.56	0.79
2016	0.78	1.20	0.73	1.28	0.82	0.58	0.81
2017	0.75	1.24	0.73	1.23	0.84	0.58	0.80
2018	0.71	1.19	0.74	1.17	0.84	0.59	0.79

The results presented in Tables 1 and 2 should be interpreted as follows: In 2018, for the average monthly wage in the enterprise sector, the household could purchase 0.65 m^2 of usable floor space on the primary market and 0.71 m^2 on the secondary market. In 2007, a drop in the index is visible, which reflects changes in the local market caused by the crisis in the United States. Transaction prices significantly increased, which, with unchanged incomes, resulted in a decrease in housing availability. However, it should be noted that both the primary market and the secondary market after the crisis show an upward trend, and its increase in value is different for each market.

The values of the housing availability index have been deliberately placed in two separate tables in order to be able to consider the primary and secondary market separately. Interesting changes are presented in the primary market in Cracow and Warsaw. Cracow until 2012 was characterized by lower availability of housing than the other markets. In subsequent years, the index increased, matching the values presented in other markets. This may be testified by the development of the local developer market. However, housing availability index in Warsaw, despite the growing trend, remains low in comparison to other cities.

The secondary market of the same cities was subject to slight fluctuations in the index and reflects similar changes as the primary market. It should also be noted that the secondary market is generally characterized by higher housing availability than the primary market. In order to be able to analyse in detail the changes in housing availability between the primary and secondary market, they were compared (Table 3).

Table 3. Changes in the housing availability index on the primary and secondary market in selected Polish cities in 2006 to 2018 (in m^2) (Source: own calculations)

Year	Gdańsk	Katowice	Cracow	Łódź	Poznań	Warsaw	Wrocław
2006	–0.04	*–0.55*	–0.08	*–0.50*	–0.09	0.05	0.22
2007	–0.06	–0.32	–0.05	–0.18	–0.08	0.03	0.03
2008	–0.06	–0.25	–0.08	–0.19	–0.09	0.02	0.05
2009	0.01	–0.27	–0.08	–0.21	–0.09	0.04	0.07
2010	0.02	–0.26	–0.05	–0.18	–0.10	0.03	0.03
2011	–0.01	–0.28	–0.04	–0.22	–0.10	0.02	0.00
2012	–0.05	–0.35	–0.04	–0.25	–0.07	0.04	–0.02
2013	–0.11	–0.40	–0.02	–0.27	–0.13	–0.02	–0.07
2014	–0.11	–0.35	–0.01	–0.29	–0.15	0.00	–0.09
2015	–0.10	–0.35	0.00	–0.34	–0.16	–0.01	–0.11
2016	–0.10	–0.35	–0.06	–0.38	–0.14	–0.02	–0.11
2017	–0.07	–0.37	–0.05	–0.32	–0.12	0.01	–0.09
2018	–0.06	–0.30	–0.05	–0.26	–0.13	–0.01	–0.07

Negative values presented in Table 3 indicate how much square metre the availability of housing is higher on the secondary market than in the primary market. The biggest differences are in the market city of Katowice and Łódź, where in 2006 the difference amounted to 0.55 m^2 and 0.50 m^2 (the biggest differences are italicized). After 12 years, this difference has almost halved, but the value of the index is still high. This means that the greater availability of housing in both cities on the secondary market may be related to the low activity of developers and a high difference in transaction prices (about 200 to 250€/1 m^2). From the presented results it is clear that the availability of housing in Warsaw at the primary and secondary market is subject to very low volatility, and over the years has remained at a constant level. Housing market in the capital of Poland can therefore be considered as the best developed.

This study also carried out the dynamics of changes in the availability of housing in two variants: with reference to the base year 2006 (Fig. 1) and the previous year (Fig. 2). This study is also divided into the primary and secondary market.

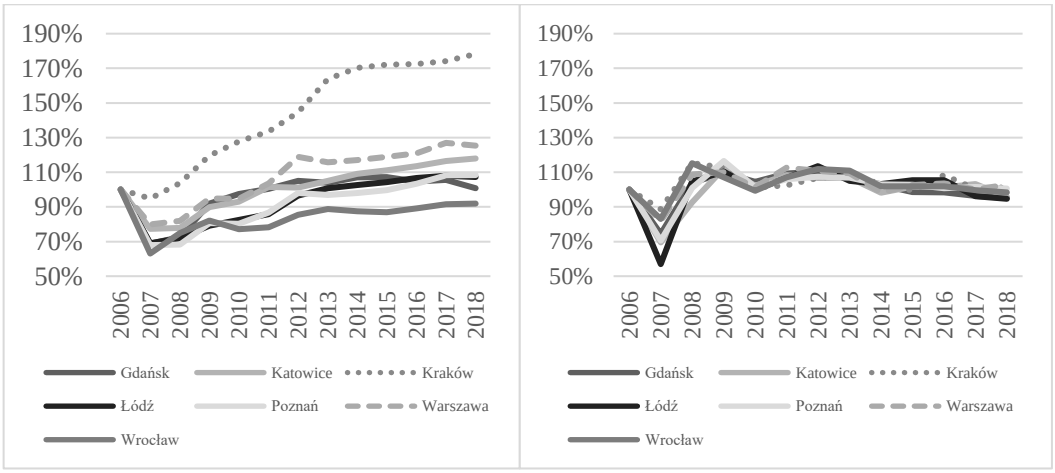

Fig. 1. The dynamics of housing availability indicator over time in relation to the base year 2006 (left: primary and right: secondary market) (Source: own calculations)

During the conducted analysis to the base year 2006, significant differences were noticed. On the primary market, the highest dynamics can be seen in Cracow housing market, which has almost doubled. A high change can also be noticed in Warsaw; however, compared to Cracow, it is half lower. This value can be regarded rather as similar to the rest of the primary housing market in Poland. On the other hand, the change in the index on the secondary market seems to have stabilized in the analysed period. There are no significant fluctuations compared to the primary market. In addition, the dynamics on both markets oscillate at a similar level (except the case of Cracow).

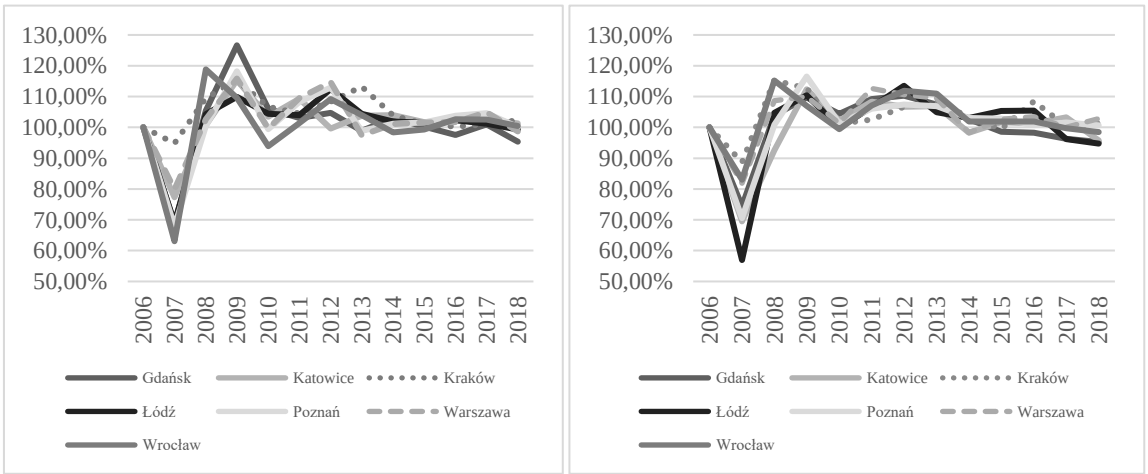

Fig. 2. The dynamics of housing availability over time in relation to the previous year (left: primary and right: secondary market) (Source: own calculations)

The test dynamics of the phenomenon in relation to the previous year (Fig. 2) were also examined. In this case both markets are characterized by similar dynamics. However, fluctuations in the primary market were slightly higher than fluctuations in the secondary market. Since 2014, in both cases the dynamic fluctuates around a similar level. Therefore, it can be assumed that changes in the housing availability indicator in recent years are stable and in the current market conditions, it may be assumed that they will continue to develop at a similar level.

The results regarding changes in the housing availability index in the primary and secondary market can also be presented in a different form, more accessible for the average household. Using data on the value of the housing availability indicator and the average usable floor space of one apartment in the analysed period, it is possible to calculate how many years the household should save to be able to buy its own property. Table 4 shows how many years a household needs to save in order to purchase residential real estate on the primary market or secondary market. It was assumed that the household wants to buy an apartment with an average usable area for the period under review (according to GUS data) and that it will allocate the entire monthly income for this purpose.

Table 4. Period during which the household will be able to buy own property, assuming that it will spend the entire average monthly income (in years) (Source: own calculations)

City	Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Average usable floor area of a residential building	69.5 m^2	69.8 m^2	70.2 m^2	70.5 m^2	72.3 m^2	72.6 m^2	72.8 m^2	73.1 m^2	73.4 m^2	73.6 m^2	73.8 m^2
Gdańsk	PM	9.0	13.1	12.5	9.9	9.6	9.4	9.0	9.1	8.9	8.9	9.1
	SM	8.5	11.5	11.1	10.2	10.0	9.2	8.4	7.8	7.6	7.8	7.9
Katowice	PM	7.7	10.0	10.0	8.7	8.6	7.9	8.0	7.7	7.5	7.4	7.2
	SM	4.5	6.4	7.0	6.3	6.3	5.8	5.5	5.1	5.2	5.2	5.1
Cracow	PM	14.8	15.7	14.4	12.6	12.1	11.6	10.7	9.5	9.2	9.1	9.1
	SM	12.2	13.8	12.1	10.8	10.9	10.7	10.0	9.3	9.0	9.1	8.4
Łódź	PM	6.9	10.0	9.6	8.8	8.6	8.3	7.4	7.2	7.0	7.0	6.8
	SM	*4.3*	7.6	7.3	6.7	6.8	6.4	5.7	5.4	5.3	5.0	4.8
Poznań	PM	8.8	13.0	13.0	11.0	11.4	10.6	9.4	9.5	9.4	9.3	9.0
	SM	7.7	10.9	10.9	9.4	9.5	9.0	8.4	7.9	7.7	7.5	7.5
Warsaw	PM	12.5	15.8	15.5	13.4	13.8	12.7	11.1	11.4	11.3	11.2	11.0
	SM	14.2	*17.4*	16.1	14.7	14.9	13.3	12.0	11.0	11.3	11	10.7
Wrocław	PM	7.4	11.8	10.0	9.2	10.0	9.9	9.1	8.8	9.0	9.0	8.8
	SM	10.3	12.5	10.9	10.2	10.5	9.9	8.9	8.0	7.9	7.8	7.6

PM, primary market; SM, secondary market.

Due to the lack of data on the average usable area of dwellings in 2017 and 2018 these years are not included in the analysis. Table 4 shows the lowest value and the highest value (italics, Łódź, Warsaw). Interestingly, both fall in the years 2006 and 2007, therefore a period similar to the crisis in the U.S. housing market. When comparing the extreme years, 2006 and 2016, in many cases it can be noticed that, despite the upward trend in the housing availability indicator, the result in many cases remains at a similar level (Gdańsk, Katowice, Łódź). The exception is Cracow and Warsaw, where the analysed value has fallen.

Conclusions

Housing availability in both the primary and secondary market (except for the crisis in the United States, 2007) shows an upward trend, and the increase in its value varies for each city. In both cases, Warsaw has the lowest housing availability and the lowest level of index fluctuations. It can be considered that the value of this index is stable. Until 2012, Cracow was also characterized by lower housing availability than other markets. The conducted analysis also showed that the secondary market of selected cities is generally characterized by higher housing availability than the primary market. The biggest differences between housing availability index of the primary and secondary market exist for the city of Katowice and Łódź. The accepted thesis was therefore proved.

Analysis of the dynamics of changes in the value of the indicator in relation to the base year 2006 on the primary market showed significant differences for the city of Cracow. In this case, it has almost doubled. Such high growth should be associated with the revival of the development market and its high efficiency in creating a new housing stock increase. In other cases, the analysis of the index of dynamics did not show any significant changes.

The study of the value of the housing availability index in Poland, broken down into the primary and secondary market, provided valuable information about its shaping and dynamics of change. It is widely known that high housing availability is a desirable situation for both households and the state's housing policy. Therefore, the information obtained in this paper is an important contribution to research on the housing market. The upward trend in housing availability should be identified with, above all, the constant improvement in income conditions of households and the development of the market in Poland.

In the future, research on the level of housing availability index in Poland should be continued, taking into account changes in the business environment, for example, the impact of government programs subsidizing the purchase of their own homes. The study could also be extended to compare the availability of housing for another city in Poland, as well as with other countries.

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THE QUALITY OF BRAND PRODUCTS: EXPECTED ATTRIBUTES VS. PERCEIVED REALITY

Pavol Durana[1], Jana Kliestikova[2], Maria Kovacova[3]

[1]University of Zilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitna 1, 010 26 Zilina, Slovak Republic, pavol.durana@fpedas.uniza.sk

[2]University of Zilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitna 1, 010 26 Zilina, Slovak Republic, jana.kliestikova@fpedas.uniza.sk

[3]University of Zilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitna 1, 010 26 Zilina, Slovak Republic, maria.kovacova@fpedas.uniza.sk

Abstract

Research purpose. The quality means a core attribute of the product. Based on empirical assessment of the consumer, it is ascertained if the products are of high quality. However, there may be considerable counterarguments against this assessment, because quality is a subjective characteristic. For this reason, a paradoxical situation arises – the same product that we consider to be a quality product someone else may regard as insufficient quality. What is considered standard quality level in some cases may be the assumed to have achieved world-class quality. This way the definition of quality product is very difficult. Brand is one of possible ways to differentiate products from one to another and at the same time it is one of possible ways to simplify consumer choices of choosing the best product. The brand can be the label for many consumers synonymous with quality. In this paper, the existence of difference between expected and delivered quality of brand products is analysed.

Design / Methodology / Approach. The survey of detection of the sources of the value of the brand was realized in 2018 in Slovak conditions. This primary source provided the base assessment of quality of branded sport clothes, cars, banks, cola drinks and brand products in general. Using factor analysis, supported by Cronbach's alpha, verified by Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity, comprehensive factors that enable comparison of expected attributes and perceived reality were constructed. The extraction method of factor analysis was principal component analysis, the rotation method was Varimax with Kaiser normalization. Then the factors were analysed by chi-square test and correspondence analysis.

Findings. The objective of this article was to detect the existence of differences between the expected and perceived quality of brand products in Slovak conditions. Comprehensive factors were constructed that contain information about quality of branded clothes, cars, banks, cola drinks and brand products in general. The dependence of expectations and reality was indicted and paper resolved the relations between individual categories of factors.

Originality / Value / Practical implications. The original survey of attitudes of Slovak consumer was made. The information about of notable sample was analysed, and this empirical study pointed out the real quality of brand products.

Keywords: Brand; Consumer; Product; Quality.

JEL codes: M30; M31.

Introduction

"During the last decade world has undergone many dramatic changes, one such change that change the lifestyle of the human kind is the change in the shopping patterns of the consumers regarding various products and services" (Singh & and Singla, 2018). Marketing management implies the understanding of the dependence between market and consumption as well as the philosophies related to the maximization of an enterprise's output (Chaves, 2017). Every marketing manager must identify her consumers, understand them and focus on them. "Consumers use extrinsic and intrinsic cues to set preferences and make purchase decisions" (Audrin *et al*., 2018). Quality means the core cue for the majority of the consumers. "Delivering quality products requires an understanding of the critical dimensions and cues that consumers use to judge quality." Brucks *et al.* (2000). Dawar & Parker

(1994) note that brand is one of the signals of consumer's marketing universals for quality. Nagaraj & Singh (2018), Valaskova *et al*. (2018) and Ledikwe *et al*. (2019) note that high quality builds consumer loyalty to the brand. Janoskova & Krizanova (2017) add that "the brand name identification with consumers creates benefits that the enterprise may charge higher price for the same product, leading to higher profit margins, growth and firm value to net sales ratio". Successful differentiation of the brand products has been gained worldwide (Singh & Singla, 2018) and for the enterprises, it is necessary to know the assessment of delivered quality brand products from the view of the consumers. The goal of this article is to ascertain the existence of differences between anticipated and perceived quality of brand products in Slovak conditions and indicate the dependence (correlation) of expectations and reality.

Literature Review

The quality associated with a brand means significant factors of the reputation as a part of enterprise's "goodwill" (Podhorska & Siekelova, 2016) and the tools of competitiveness or support of satisfaction. Vagner (2016) assesses competitiveness tool in the global market as follows. The companies have a possibility to offer their services to more potential customers. The companies already established in the domestic market with their own know-how may try to find new markets, where its products could fulfil a gap in those markets. On the other hand, by opening of market boundaries, new competitors will join the trade and will attempt to gain their position on the market. In this connection, Vagner & Bartosova (2017) analyze core and supporting activities in Slovak enterprises, concretely focusing on the enterprises located in the central Slovak region. Kicova & Nadanyiova (2017) consider brand a tool of strategic marketing. Nadanyiova *et al*. (2018) relate the tool of strategic marketing to value-based pricing strategy. Sugrova *et al*. (2017) detect the influence of product quality on consumer satisfaction. This paper found that frequency of buying dairy product depends on whether the customers are satisfied with the product quality. Deep research about customer satisfaction is made by Oh & Kim (2017). This study reviewed 242 articles appearing in six selected hospitality and tourism journals and 71 articles in four business journals over the period 2000–2015. A comprehensive coding scheme was developed to sort each study by more than 50 criteria. Chen *et al*. (2019) mark the quality of brand product as a determinant of quantity of repurchase and brand attractiveness and memorable brand experiences are found to strengthen the positive effect of brand awareness and perceived value. Brand name as indicators of quality dimensions confirm the observation of Brucks *et al*. (2000). Using a qualitative study, the authors develop a generalizable typology of quality dimensions for durable goods that includes ease of use, versatility, durability, serviceability, performance, and prestige and conduct a process-tracing laboratory experiment. The results of the experiment indicate that consumers use price and brand name differently to judge the quality dimensions, searching for price and brand name much more frequently when evaluating prestige than when evaluating any other quality dimension. Zhu & Chen (2017) discuss that consumers' purchase decisions typically affect brands of the manufacturer as well as the retailer brand. This research reveals that the loss/gain feelings as the underlying mechanism drive such effects and additionally shows that reference points can be primed such that their effects for one brand can spill over to other brands. Kato & Tsuda (2018) emphasize that the concept of quality includes not only objective value (functional value) but also subjective value (emotional value). Valle *et al*. (2017) assess consumers' willingness to pay for the expected quality. There are a few examples of studies evaluating the factors that create a quality brand image based on the customers' perception (Kato & Tsuda, 2018). They extracted top quality brands from the perspective of customers across industries and evaluated their causal relationship. Data was analysed in nine countries. The perceptions of product quality and brand name was studied by Rao & Monroe (1989) 30 years ago. The role of perceived quality also in brands' purchase intention was examined by Calvo-Porral & Levy-Mangin (2017). A structural equation modelling on a sample of 439 consumers was developed, distinguishing between consumers with high perceived quality (HPQ) and low perceived quality (LPQ). Their findings highlight that purchase intention of store brands is strongly influenced by confidence for both HPQ and LPQ customers, followed by product price. Additionally, results suggest the moderating role of perceived quality on some of the proposed relationships. The new preferences of consumer comparing the enterprises that produce original brand against high-quality copycats were identified by Nguyen & Gunasti (2018). The results systematically

show the power of brand identity cues in helping original brands reduce loss of market share to copycat brands using superior product attributes. They also reveal the role of brand equity, conspicuous consumption and consumers' tendency of using brands as status symbols in enhancing the effect of brand identity cues in the face of superior copycats.

Methodology

An analysis of the literature allows us to formulate the following research question:

Hypothesis: *A significant dependence exists between the expected quality and the perceived quality of brand products.*

All details regarding the materials and methodology are as follows:

1. The information (primary source) used in this paper was gained from the survey undertaken by the authors. The survey was carried out in 2018 to ascertain the attitudes of Slovak consumers to branded products, in particular, the concrete attitudes to the quality of brand products in general, branded sport clothes, cars, banks and cola drinks. Random sampling was chosen for our analysis. Singh & Masuku (2014) suggest minimum size of the sample to contain 400 elements. The original sample had had 2 002 answers; after elimination of outliers the sample was reduced to 1641 cases. The attributes of the sample are demonstrated in Table 1.

Table 1. The attributes of the sample (*Source*: Authors based on own survey)

Gender					
Men			women		
708			933		
Education					
Only basic educated		Higher educated		University educated	
303		867		471	
Age					
16–25 years	26–35 years	36–45 years	46–55 years	56–65 years	Over 65
229	301	456	158	244	253
Monthly household income					
To €500	€501–1 000	€1 001–1 500	€1 501–2 000	Over €2000	
147	336	624	405	129	

2. The survey contained 10 questions measured by a 5-point Likert scale, where point 1 corresponds to ‘strongly disagree’ and 5 ‘strongly agree’. Questions were labelled from Q01 to Q10. All questions have the same positive coding. The content of the questions is part of the results. It was decided not to use all questions alone, but form them from new components (factors, variables), that have common information about perceived quality and expected quality. The set of questions was reduced to two heterogeneous components by factor analysis. The number of components was the assessed criterion of convergence of eigenvalue to the value 1 (Kral *et al*., 2009). The adequacy of the use of factor analysis is checked by the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity. The extraction method is principal component analysis, the rotation method is Varimax with Kaiser normalization and rotation converged in three iterations. The reliability of the factors is tested by Cronbach's alpha. Rimarcik (2007) describes Cronbach's alpha as the possible method of the determining the reliability of the used method. Cronbach's alpha is an index of internal consistency of the factor and can take values from 0 to 1.
3. Cross-tabulation of the expected quality and the perceived quality was done to indicate the possibility of the use of the Person chi-square test and to test the dependence between these ordinal variables. The assumption of 20% of cells having less than five expected (theoretical) observations is satisfied; it is exactly 20% of cells. The strength of dependence and its statistical

significance between expected quality and the perceived quality were tested by Somers' d, Kendall's tau-b, Kendall's tau-c and Gamma according to Rezankova (2017). These coefficients were used because of the variables are ordinal.

4. Subsequently, the authors undertook the correspondence analysis with an overview and correspondence map of row points, an overview and correspondence map of column points, and a correspondence map of row and column points as well, in order to ascertain the relationship between categories of expected quality and the perceived quality. Correspondence analysis is a method used to detect groups of similar categories. Its main advantage is the ability to analyse the relationship between the categories of two variables at the same time (Rezankova, 2017). Correspondence analysis examines the internal structure by means of correspondence maps showing variable categories in a reduced two-dimensional coordinate system. Kral *et al*. (2009) discuss the fact that row and column points can be considered as coordinates of the point in $r(s)$ dimensional space, and from the viewpoint of the practical application, their visual representation uses two-dimensional correspondence maps.
5. IBM SPSS Statistics v. 25 software was used.

Results

The answers of the realized survey were ordinal variables. Rimarcik (2007) recommends for social sciences the possibility to use the methods of interval variables for analysing ordinal variables. However, two criteria must be fulfilled: (i) the number of categories should be at least 5 and (ii) at the same time there is no reason to predict significant differences in distance between individual categories. For these reasons, we consider the answers of the consumers as the interval input variable.

Table 2. KMO and Bartlett's test (*Source*: authors based on SPSS output)

Kaiser-Meyer-Olkin measure of sampling adequacy		0.8833
Bartlett's test of sphericity	Approx. chi-square	6511.56
	df	45
	Sig.	0.000

Before undertaking factor analysis, it is necessary to calculate sampling adequacy. Factor analysis requires the correlation of original input variables (Kral *et al*., 2009). To evaluate the dependence of the input variables, KMO criterion is used. In our case is the value of KMO (Table 2) equals to 0.8833. The KMO value between 0.8 and 1 indicates the sampling is adequate; concretely, if the value is in the spread 0.80 to 0.89, adequacy is meritorious (Kaiser & Rice, 1974). Correlation matrix is an identity matrix, which would indicate that variables are unrelated, and is the null hypothesis of Bartlett's test of sphericity. Based on the comparison of the significance from Table 2 to the significance level of 0.05, we rejected null hypothesis and accepted alternative hypothesis: correlation matrix isn't an identity matrix, variables are related, and factor analysis is useful.

The number of factors can be chosen according many criteria. Figure 1 (Scree plot) shows the number of possible of components and the relevant eigenvalues for them. The next step of the analysis is the derivation of some groups that are so similar in the characteristics that could be analysed together (Svabova & Kral, 2016). We chose two components because the eigenvalue is close to the value 1 and these factors explained 58.119% of the variability (Table 3). Rimarcik (2007) highlights that answers to the individual questions do not have the same importance as the overall score of the factors.

Table 3. Total variance explained (Source: authors based on SPSS output)

Component	**Initial Eigenvalues**		
	Total	**% of variance**	**Cumulative %**
1	4.744	47.443	47.443
2	1.068	10.676	58.119

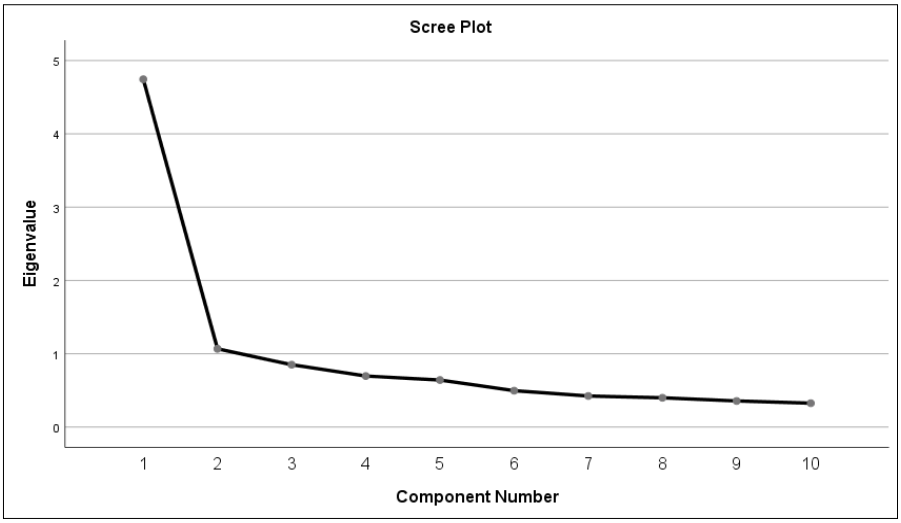

Fig. 1. Scree plot (Source: Authors based on SPSS output)

Ideally, for interpretation, any indicator should show a saturation with just one factor. In practical situations, one indicator has high factor saturation with several factors. It is rotated and tried again and again to ensure that each indicator has high saturation in one factor (Kral *et al*., 2009). It is possible to see that highest saturation of questions 01, 03, 05, 07 and 09 with component 1 is sorted by size and questions 2, 4, 6, 8 and 10 with component 1 also sorted by size (Table 4). Factor 1 involves all questions describing the attitudes of perception of quality of brand products (Table 5); this factor is labelled as perceived quality. Factor 2 contains all questions concerning the attitudes of expectation of quality of brand products (Table 6), which we call the expected quality.

Table 4. Rotated component matrix (Source: authors based on SPSS output)

Component	**Questions**									
	Q01	Q09	Q07	Q05	Q03	Q04	Q06	Q08	Q10	Q02
Component 1	**0.811**	**0.773**	**0.668**	**0.655**	**0.615**	0.159	0.199	0.259	0.416	0.430
Component 2	0.060	0.269	0.318	0.285	0.401	**0.819**	**0.753**	**0.711**	**0.682**	**0.433**

Table 5. Component 1 (Source: authors)

Questions	**Content**
Q01	I perceive brand product as a quality product.
Q09	I perceive branded sport clothes as a quality product.
Q07	I perceive branded cola drinks as a quality product.
Q05	I perceive branded banks as a quality product.
Q03	I perceive branded cars as a quality product.

Table 6. Component 2 (Source: authors)

Questions	**Content**
Q04	I expect quality from branded cars.
Q06	I expect quality from branded banks.
Q08	I expect quality from branded cola drinks.
Q10	I expect quality from branded sport clothes.
Q02	I expect quality from brand product.

The values of Cronbach's alpha are shown in Table 7; the values are equal to 0.820 and 0.806. Rimarcik (2007) states that a Cronbach's alpha value at least 0.8 is required. It is a sign of a very high internal correlation between the items and indicates that items are based on the same principle. We note that the high Cronbach's alpha value marks that the questions are appropriately connected and the factors create the base for the very reliable results of the followed analyses. We do not use the factor score but the average of the questions rounded; the higher the value, the higher agreement of the consumers.

Table 7. Reliability statistics (Source: authors based on SPSS output)

Component	Cronbach's alpha	Number of items
Component 1 (Perceived quality)	0.820	5
Component 2 (Expected quality)	0.806	5

The next step is the cross-tabulation of the expected quality and the perceived quality. Twenty per cent of the cells had expected count less than 5 (bolt values in Table 8). The minimum size is exactly 20%.

Table 8. Cross-tabulation (Source: authors based on SPSS output)

Expected quality	Perceived quality (Observed/Expected)										Total
	1		2		3		4		5		
1	10	**0.5**	7	**1.8**	0	5.7	0	6.8	0	**2.2**	17
2	9	**1.3**	24	**4.7**	11	14.8	0	17.5	0	5.7	44
3	13	8.6	74	32.3	185	100.6	26	118.8	1	38.8	299
4	10	20.2	51	76.1	270	237.5	353	280.5	22	91.6	706
5	5	16.5	21	62	86	193.4	273	228.5	190	74.6	577
Total	47		177		552		652		213		1 641

Hypothesis: *A significant dependence exists between the expected quality and the perceived quality of brand products*.

Testing of Hypothesis: We test the hypothesis of dependence between the expected quality and the perceived quality of brand products at the significance level of 0.05, which is compared to the significance. Based on data from Table 9, we reject the hypothesis of the independence of the variables analysed and accept the significant dependence of the expected quality and the perceived quality of brand products.

Table 9. Pearson chi-square test (Source: authors based on SPSS output)

Pearson chi-square	df	N of valid cases	Significance
972.817	16	1 641	0.000

The Pearson chi-square test confirms the dependence between these ordinal variables. Based on data from the Mantel-Haenszel test shown in Table 10, we repeatedly confirm the dependence.

Table 10. Mantel-Haenszel test (Source: authors based on SPSS output)

Mantel-Haenszel test	df	N of valid cases	Significance
828.143	16	1 641	0.000

We identified the significant dependence of the ordinal variables. Rezankova (2017) recommends indicating the intensity of the correlation by means of Somers' d, Kendall's tau-b, Kendall's tau-c and Gamma according to this scale:

$0.0 <$ the value of the coefficients ≤ 0.3 weak correlation

$0.3 <$ the value of the coefficients ≤ 0.8 medium dependence

$0.8 <$ the value of the coefficients ≤ 1.0 strong dependence

The values of all coefficients determine a medium level of correlation between the expected quality and the perceived quality of brand products. The significance of the coefficients should be below the determined significance level. Based on the comparison of the significance from Table 11 to the significance level of 0.05, we assess that all correlation coefficients are statistically significant.

Table 11. Coefficients of correlation (Source: authors based on SPSS output)

Ordinal by ordinal	Value	N of valid cases	Significance
Somers' d	0.532	1 641	0.000
Kendall's tau-b	0.532	1 641	0.000
Kendall's tau-c	0.451	1 641	0.000
Gamma	0.734	1 641	0.000

Correspondence analysis is used for detecting groups of similar categories. Its great advantage is the ability to analyse the relationship of a category of two variables at the same time (Rezankova, 2017). So, this method was employed to assess different categories for the relationship between expected quality and the perceived quality of brand products. Correspondence analysis examines the internal structure by correspondence maps showing variable categories in a reduced two-dimensional coordinate system. The first output of the correspondence analysis is the row and column points that are found in the Tables 12 and 13. Kral *et al*. (2009) discuss row and column points can be considered as coordinates of the point in $r(s)$ - dimensional space and from the viewpoint of the practical application their visual representation is used two-dimensional correspondence map. The column total in the point tables indicated the contribution of row (column) points in total inertia. Inertia represents the degree of quality with which the points of the multidimensional space have been transformed into the correspondence map. In both cases, the individual contributions got 1 or was close to 1, which reflected the fact that the two-dimensional map corresponds to the well-considered categories. Correspondence maps were shown, individually for row, column points and common correspondence map of row and column points.

Table 12. Overview row points (Source: authors based on SPSS output)

Expected quality	Mass	Score in dimension		Inertia	Contribution				
					of point to inertia of dimension		of dimension to inertia of point		
		1	2		1	2	1	2	Total
1	0.010	-2,710	4,084	0.131	0.127	0.425	0.348	0.536	0.884
2	0.027	-1,935	1,505	0.091	0.168	0.149	0.659	0.270	0.930
3	0.182	-1.033	-0.302	0.144	0.324	0.041	0.809	0.047	0.855
4	0.430	-0.034	-0.438	0.055	0.001	0.203	0.005	0.615	0.620
5	0.350	0.807	0.459	0.172	0.380	0.181	0.796	0.175	0.970
Active Total	1.000			0.593	1.000	1.000			

Table 13. Overview column points (Source: authors based on SPSS output)

Perceived quality	Mass	Score in dimension		Inertia	Contribution				
					of point to inertia of dimension		of dimension to inertia of point		
		1	2		1	2	1	2	Total
1	0.029	-1,926	2,533	0.152	0.177	0.452	0.420	0.492	0.912
2	0.108	-1,194	0.413	0.111	0.256	0.045	0.830	0.067	0.897
3	0.336	-0.460	-0.526	0.086	0.119	0.229	0.494	0.439	0.932
4	0.397	0.464	-0.141	0.076	0.143	0.019	0.679	0.042	0.721
5	0.130	1,187	0.892	0.168	0.305	0.254	0.651	0.250	0.901
Active Total	1.000			0.593	1.000	1.000			

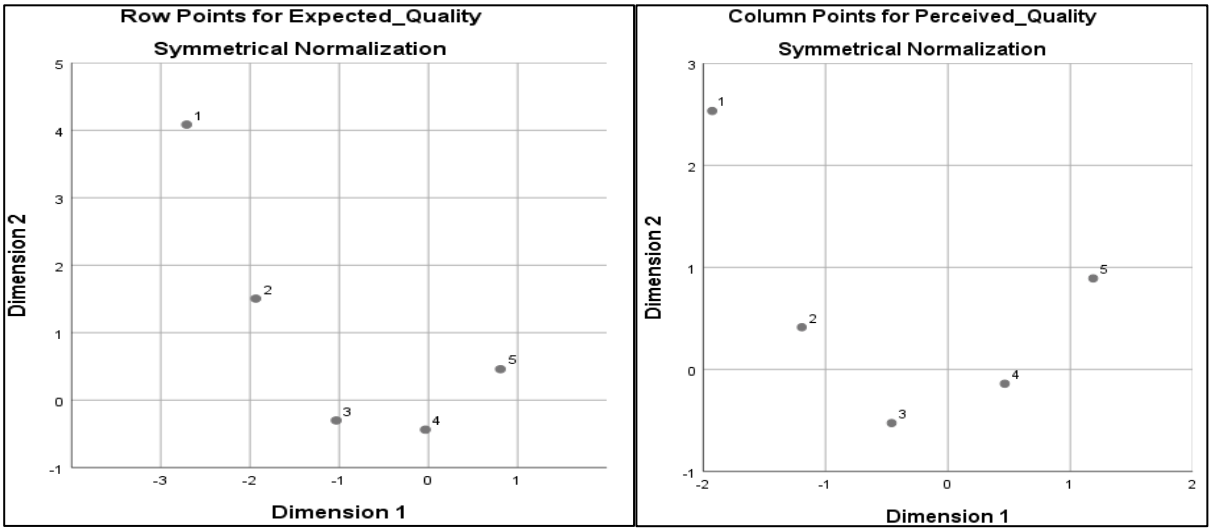

Fig. 2. Correspondence maps of expected and perceived quality (Source: Authors based on SPSS output)

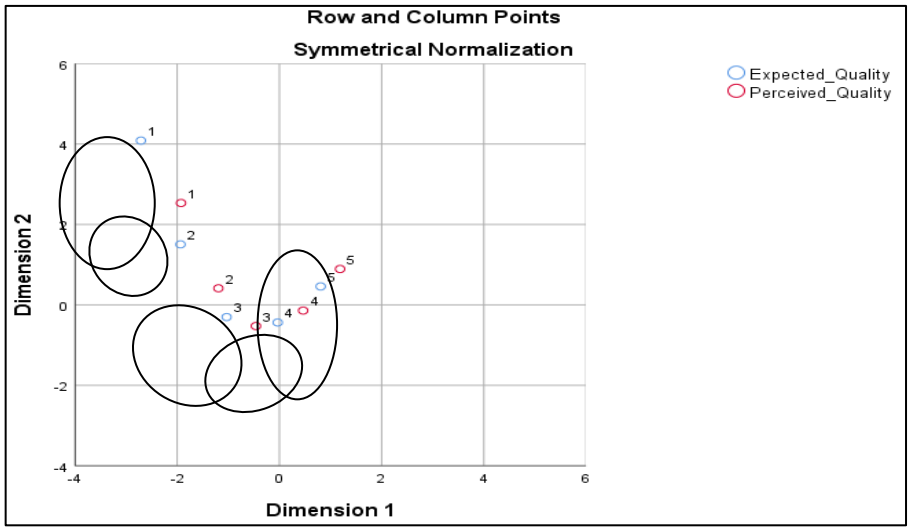

Fig. 3. Correspondence map of expected and perceived quality (Source: Authors based on SPSS output)

Based on common correspondence map of row and column points, we derived the relationship between the categories of expected quality and the perceived quality of brand products. First, the map indicates the relationship between the lowest points of the variables (marginal part of the sample). It means if the consumers expect that the quality of brand products is very low, their attitudes of perceived reality of quality of brand products are the same. In the case, if the consumers foresee not

the lowest quality, but still low (minority portion of the sample), delivered quality of brand products is worse than expectations. Second, if the consumers are somewhere in the middle, they await neutral quality of brand products, and they perceive also neutral reality respectively in same cases even low quality. If the consumers have positive expectations of quality of brand products, they are confronted with positive delivering or neutral result. Lastly, if consumers estimate high quality of brand product they are mostly satisfied and in minor cases is the considered quality positive but not the world-class as they anticipate.

Conclusions

In our paper we ascertained if all consumers consider brand products as a quality product, the dependence between expected and perceived quality as well as the intensity and last area was identification of the relationship between categories of expected and perceived quality of brand products. We did not solve all categories of brand products, but we created common comprehensive constructs of consumer's attitudes towards brand products in general, branded sport clothes, branded cars, branded banks and branded cola drinks. We analysed the research question by hypothesis that a significant dependence exists between the expected quality and the perceived quality of brand products. We accepted this hypothesis. It was confirmed statistically significant and medium correlation between the expected and the perceived quality. There was a little section of the sample which attitudes are negative to the brand products. They expect from brand products very low or low quality and their real perceived quality corresponds to it respectively is a bit worse. The rest of the majority part of the sample marked neutral or positive attitudes to brand products. These consumers had the conformity between the expectations and reality or there was a difference of a point when expectations surpassed reality. Further research of the issue should detail focus on identification of the causes of unconformities between expected and perceived quality of brand products and possible solutions for the managers to gaining the equality.

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RUSSIAN ARCTIC SECTOR BOUNDARIES: THE INTERNATIONAL ISSUES OF LEGAL REGIME IN THE ARCTIC REGION

Sofiya Shvelidze

IMO International Mariitme Law Institute, Msida, Malta, info@imli.org

Abstract

Research purpose. The regime of maritime spaces as a general rule 'is determined by the principles and norms of international law relating to the oceans and enshrined in the *Geneva Convention on the Law of the Sea of 1958 and the United Nations Convention on the Law of the Sea of 1982(UNCLOS)*. However, the issue is that UNCLOS practically does not fix any special regime on the Arctic, bearing in mind that the use of the Arctic spaces is rather effectively regulated at the national levels. Arctic issues in this regard lacked in-depth analysis, and no attempts to develop specific norms and approaches with regard to the Arctic region were made, with the exception of Article 234 of UNCLOS, which is related to the right of the coastal States to 'regulate navigation' in its Exclusive Economic Zones. The purpose of the current research is to analyse how far a State may go in the process of establishment of the laws and regulations while exercising the right granted by Article 234, with the particular focus made on the position taken by the Russian Federation.

Methodology. In order to achieve the aims of the research, a descriptive method was chosen as the method for clarification on the legal regime currently applicable in the Russian Arctic Sector, in particular supported by the dogmatic method, in order to understand and explain the position taken by the legislative bodies.

Findings. The result of the research is the attempts to satisfy how having interests and stakes in the region of high overall salience contributes to prioritization by Russian Federation of its rights over the region by restrictions imposed on the navigational freedoms granted to the States by UNCLOS. Additionally, suggestions are made in respect of the possible solutions necessary in order to strike a balance between national interests of the Arctic States and rights of others States to access the area without causing any harm to the environment and security of the region.

Keywords: Environment in iced-cover areas; Legal regime; Russian Arctic Sector; UNCLOS.

JEL codes: K32; K33; K39.

Introduction

In the fundamentals of the *State Policy of the Russian Federation* in the Arctic region for the period up to 2020 and beyond, approved by the President of the Russian Federation on 18 September 2008, a significant political, economic and legal term was introduced – the Arctic zone of the Russian Federation. In this regard, a number of substantive legal issues arose: the meaning of this term; its relation to the terms previously used in legal doctrine, including 'the USSR polar possessions sector', 'Russian Arctic'; what are the legal boundaries of the Arctic zone of the Russian Federation; what is the legal regime of this space, specifically, the legal regime of the economic activity and environmental protection. At the same time, a number of foreign studies consider that the legal regime of the Arctic is rapidly changing as the areas in the Arctic Ocean covered with centuries-old ice constantly shrink. Influential construct models of the Arctic policy are building regional scenarios for the evolution of the legal regime of this region, determining the potential impact of such an evolution on all spheres of States' life including society and business. Within the framework of strategic forecasting of the consequences of potential 'global' Arctic policy, projects are being initiated, the purpose of which is to provide a theoretical description of favourable political and legal conditions in order to meet the interests of a particular foreign State or regional interstate association.

Representatives of the natural sciences do not question the importance of the Arctic region for the formation of the Earth's climate, especially the temperature macro dynamics of the planet. For the Russian Federation, due to its geographical location, bearing in mind the fact that many of its regions are located in high latitudes of the Northern Hemisphere, it is necessary to take into account everything that happens in the Arctic. Special importance is given to the ambiguous predictions of changes in the legal regime of the Arctic region, as well as the fact that this polar region has now

grown substantially and now is also being considered by many other countries in the world, in particular, the economically developing Asian states, including People's Republic of China. In addition, due to the depletion of the natural resource base of the land part of our planet, the promising value of the seabed and subsoil of the Arctic Ocean increases, and this factor in the modern conditions of the economic interdependence of the world and global warming aggravates the problems of interstate competition and rivalry in the development of Arctic spaces and their natural resources. The Arctic States (Russia, United States, Canada, Denmark, Iceland, Norway, Finland and Sweden) consistently confirm their fundamental interests in the Arctic. On the other hand, there are a number of 'newcomers' in the Arctic region such as Germany, China, Japan, Austria, Great Britain and Republic of Korea, as well as the European Union.

The international agreements that are applicable to the definition of the legal status of the Arctic zone of the Russian Federation are chosen as the base for the research: first of all, The St. Petersburg Convention regarding the delimitation of mutual spaces of possessions of Russia and Great Britain in North America in 1825, the Convention on the assignment to the United States of the Russian North American Colonies (Convention on the Assignment of Alaska) 1867, the 1982 UN Convention on the Law of the Sea, Convention on Biological Diversity of 1992, Convention on the Continental Shelf of 1958, Agreement on the Conservation of Polar Bears of 1973, Agreement on Cooperation in Aeronautical and Maritime Search and Rescue on the Arctic, 2011; second, relevant acts of legislation of the Russian Empire, USSR, Russian Federation: Decree of the Governing Senate of 1821, Decree of the Council of People's Commissars of the RSFSR of 1921 'On the protection of fish and animal lands in the Arctic Ocean and the White Sea', Resolution of the Presidium of the USSR Central Election Commission dated 15 April 1926 'On declaring lands and islands located in the Arctic Ocean as the territory of the USSR', USSR Law from 1984 'On approving the Decree of the Presidium of the Supreme Soviet of the USSR "On enhancing nature conservation in the Far North and areas adjacent to the northern coast of the USSR"', Resolution of the Council of Ministers of the USSR in 1990 'On measures to ensure the implementation of the Decree of the Presidium of the Supreme Soviet of the USSR of November 26, 1984 "On strengthening environmental protection in the Far North and marine areas adjacent to the northern coast of USSR"', Rules of navigation on the routes of the Northern Sea Route in 1990, and so on; as well as political and legal documents of the directive level: Fundamentals of the state policy of the Russian Federation in the Arctic for the period up to 2020 and beyond, Maritime Doctrine of the Russian Federation for the period up to 2020.

The purpose of the work is to identify the content of the legal regime of the Arctic zone of the Russian Federation as a modern large-scale object of international law, in analytical and legal comparison of this concept with those previously designated by the domestic jurisprudence ('polar sector of the USSR', 'Russian Arctic') and also in the designation of a scientific approach to the determination of the spatial limits of the Arctic zone of the Russian Federation.

In order to achieve this goal, it is important to perform the following tasks: compare the existing definitions of the terms 'Arctic', 'Russian Arctic', 'Arctic zone of the Russian Federation'; outline the historical and legal context of their formation, as well as their legal meaning; identify the substantive components of the legal regime of the Arctic zone of the Russian Federation; determine the scientific and legal approach to the designation of the spatial limits of the Arctic zone of the Russian Federation, its southern, eastern, northern and western borders; identify the international legal peculiarities of the Arctic zone of the Russian Federation; analyse international legal norms applicable to environmental protection in the Arctic zone of the Russian Federation, its economic activities, scientific research and the use of living resources in its high-latitude regions.

Literature Review

The delimitation of the Arctic region by the national sectors of the Arctic States up to the beginning of the 21st century has not been disputed by other states; however, in the last decade, the trend of non-Arctic States and a number of associations (EU, NATO) towards the formation of a new global legal regime of the Arctic zone has been clearly observed. In this regard, the current understanding of the doctrines of national sectors is ambiguous. Even in the domestic doctrine, there is no single approach to this position. Sivakov believes that 'the doctrine of the national sectors is somehow firmly justified

only in relation to land – islands and archipelagos' (Sivakov, 2012); that is, in relation to the maritime spaces of the Arctic, according to the scientist, there is already another regulation – the one based on the UNCLOS's provisions.

A number of scientists recognize that the legal regime of the Arctic, based on the sectorial principle of demarcation of the spheres of action of the sovereignties of the polar states, is a common norm of international law. Guslitcer recognizes the customary legal nature of these norms and also notes that the Arctic seas 'are special flood-type seas, such as historical bays. The development of these seas (the Kara Sea, the Laptev Sea, the East Siberian Sea, the Chukchi Sea) is a historical merit of the Soviet state' (Guslitcer, 1954).

Zhudro also takes the position that, with regard to sectorial division of the Arctic space, one should speak about the presence of established international legal customs. International legal customs in the Arctic are long-term law-enforcement practices of the Arctic States themselves, having been recognized by other countries. By virtue of international legal customs, only five coastal States exercise sovereignty over internal sea waters, territorial sea, their seabed and subsoil, as well as special rights in their '"polar possessions'" (Zhudro, 2014).

A.N. Vylegzhanin agrees with the customary legal regime of the legal regulation in the Arctic (Vylegzhanin, 2009).

Nowadays, the concept of sectorial division of the Arctic space is being criticized, primarily by non-Arctic States. Therefore, giving the sectorial principle, the status of a custom, that is, a norm 'established on the basis of a long recognition', loses its relevance (Philimonov, 2015). It is important to understand in this regard how the Arctic powers cooperate on the issue.

One needs to also pay attention to the *Ilulissat Declaration of 2008*, adopted in the city of Ilulissat (Greenland) by the Arctic States, which reinforced the following intentions of the participating States: "By virtue of its sovereignty, sovereign rights and jurisdiction over significant areas of the Arctic Ocean, five coastal States are in a unique position to respond to these opportunities and challenges. In this context, we recall that with regard to the Arctic Ocean, an extensive international legal framework is being applied, as noted by our representatives at the level of senior officials at the meeting in Oslo from 15 to 16 October 2007. In particular, the law of the sea enshrines important rights and obligations relating to the definition of the outer limits of the continental shelf, the protection of the marine environment, including ice-covered areas, freedom of navigation, marine scientific research and other uses of the sea. We remain committed to this legal framework and to a peaceful settlement of any possible overlapping claims".

Thus, the representatives of Russia, Canada, Norway, Denmark and the United States stated that there is no need to create a new universal international legal regime for the Arctic Ocean (Avkhadeev, 2016). That is, in fact, the stakeholders had expressed their rejection of the idea with respect to the revision of the legal regulation of the regime of the Arctic space.

It seems that, despite the consolidation of the stated intentions of the Sstates, disputes related to the delimitation of maritime spaces in the Arctic zone still exist. At the same time, one cannot underestimate the significance of this declaration, which, although is only of advisory nature, reflects the commitment of the Arctic States to cooperate and commit themselves to the protection of the Arctic space, as well as to consolidate a certain status quo with respect to the legal regime of the Arctic Ice. Such a joint statement of the subarctic States is especially important given the fact that, in the world community, there is a tendency from non-strategic states towards the establishment of a new regime for the Arctic space, in particular, recognition of the Arctic as a free region open to the activities of all states, what goes contrary to the interests of the subarctic States.

In addition, P. Gudev notes the advantages of customary law, drawing attention to the fact that "customary law norms cannot be regarded as subordinates with respect to conventional treaty norms. The international customary law fulfils a certain general-purpose role -– it expresses the imperatives of behaviour more effectively and is the initial basis of the international legal order, and establishes the criteria that the norms of a contractual nature must meet." The undoubted merit of customary law is

the extension of these rules to all subjects of international law, whereasile the norms of international treaties are binding only for the parties to such treaties (Gudev, 2016).

However, for the state practice to acquire international status and become the legal regulator of international legal relations with respect to the Arctic, it is necessary that these provisions be recognized or unchallenged by all members of the international community. Bearing it in mind, the characteristic of the customary rule is now in doubt.

Proponents of the position that the Arctic is a maritime space, not endowed with a special status and legal regulation, believe that the legal regulation of the Arctic Ocean is carried out in accordance with the UNCLOS. Avhadeev draws attention to the fact that, in the Arctic region, the sovereignty of states is particularly vulnerable to the maritime spaces, to which the legal regime in accordance with international maritime law applies (Avhadeev, 2016). Lukin is convinced that the UNCLOS has changed the geo-political situation in the Arctic: 'The national interests of each subarctic State can now be realized on the basis of the already completely legitimate basis of international law' (Lukin,2011).

Thus, the UNCLOS allows each Arctic State to establish the breadth of its territorial sea to a limit not exceeding 12 nautical miles, measured from baselines (Article 3 of the Convention). With respect to the territorial sea, the coastal state is granted a whole range of sovereign rights. The coastal state has the right to adopt laws and regulations that regulate the issues of innocent passage through the territorial sea; shipping safety and traffic control; the protection of navigational aids and equipment, as well as other structures or installations; conservation of living resources of the sea; preservation of the environment of the coastal state; as well as other issues established in Article 21 of the Convention. Foreign ships exercising the right of innocent passage, the concept of which is given in Articles 18 and 19 of the Convention, are required to comply with laws and regulations established by the coastal State. By virtue of Article 22 of the Convention, the coastal state has the right to demand from foreign vessels exercising the right of innocent passage to use sea corridors and traffic separation schemes established by the coastal State. The Convention also establishes the rights of protection of the coastal State in the event of a security risk (Article 25 of the Convention), rules of criminal jurisdiction on board a foreign ship (Article 27 of the Convention) and rules of civil jurisdiction regarding foreign ships (Article 28 of the Convention)).

Part V of the Convention also establishes for coastal States an exclusive economic zone, the breadth of which shall not exceed 200 nautical miles, measured from baselines, from which the breadth of the territorial sea is measured (Article 57 of the Convention). In this exclusive economic zone, the coastal state exercises sovereign rights to explore, exploit and preserve living and non-living resources, as well as managing resources in the waters covering the seabed, on the seabed and in its subsoil, as well as for managing these resources, economic intelligence activities and the development of this zone. Coastal States also exercise jurisdiction over the creation and use of artificial islands, installations and structures; marine scientific research; protection and preservation of the marine environment (Article 56 of the Convention). At the same time, in the exclusive economic zone, the coastal state due to the part 2 of Article 56 of the Convention is forced to take into account the rights and obligations of other states in the exclusive economic zone (freedom of navigation and over flight, the possibility of laying of submarine cables and pipelines by these states and other legitimate uses of the sea in accordance with international law).

In accordance with paragraph 1 of Article 76 of the Convention, the continental shelf of a coastal state includes the seabed and subsoil of submarine areas extending beyond its territorial sea throughout the natural prolongation of its land mass to the outer limit of the continental submerged margin or 200 nautical miles from the baselines, from which the breadth of the territorial sea is measured, when the outer limit of the continental margin does not extend to such a distance.

In accordance with paragraph 8 of Article 76 of the Convention, data on the limits of the continental shelf beyond 200 nautical miles from the baselines, from which the breadth of the territorial sea is measured, are to be submitted by the respective coastal State to the Commission on the Limits of the Continental Shelf. In this case, the coastal State in accordance with Article 77 of the Convention exercises exclusive sovereign rights in the exploration of the continental shelf and the exploitation of

its natural resources. The essence of these exclusive rights is also that if a coastal State does not research the continental shelf or exploit its natural resources, no other state can do so without the express consent of the coastal State.

The essence of such regulation is that the seabed and resources that are outside of the continental shelf of a coastal State are recognized as the common heritage of humankind, that is, no state has the right to make claims with regard to sovereign rights in relation to such maritime space.

However, not all scientists agree that the conventional regulation applies to the Arctic space. Avhadeev believes that only Article 234 of the Convention relates to 'Ice-covered Areas', which enshrines the right of states to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction and preservation of marine pollution from ships in ice-covered areas within the exclusive economic zones (Avhadeev, 2016), whereas other legal aspects of regulating the regime of the polar regions under the UNCLOS are not regulated. On the other hand, Cinelli rightly draws attention that the presence of Article 234, or the so-called Arctic clause, is an exception, which only confirms the general rule that the Arctic marine spaces are considered as any other marine spaces (Cinelli, 2011).

According to Tiunov, the principles for defining the limits of the continental shelf, formulated in the Convention, do not apply to the Arctic region. Application of the provisions of Art. 76 of the 1982 Convention relating to the multi-variant consideration of geological factors in determining the boundaries between the continental shelf of the Arctic state and the international seabed area cannot take place due to the fact that there is no evidence of agreement of the Arctic States Parties to the Convention 1982 for the creation in the Arctic of such an area, which would mean the regime of the 'common heritage of humankind' (Tiunov, 2009).

Zhudro is convinced that the significance of universal norms of the Convention is exaggerated, whereas the role of international customs is underestimated. In the Arctic, all global mechanisms created by the 1982 Convention and, above all, in such a sensitive issue today, do not work just the for the purposes of the distinction between the underwater spaces (continental shelf) of the Arctic Ocean. First of all, due to the huge differences between the ice-covered regions of the North and the warm waters of the Indian Ocean (the 1982 UN Convention did not specifically mention the polar regions – the Arctic and Antarctic – they were not the subject of the III conference on the law of the sea 1973-1982) (Zhudro, 2014).

Nikolaev and Peshchurov believe that the legal status of the Arctic region is unique; the Arctic cannot be viewed as a whitespace object of law – 'the role of the Arctic states in creating legal norms, their implementation and enforcement is decisive' (Nikolaev &Peshchurov, 2012).

Also, as an argument for the non-applicability of the Convention to Arctic, Efendiyev and Zhudro consider non-participation in the 1982 Convention of one of the Arctic States – the United States – and its failure to comply with the Convention provisions on the self-limitation of the continental shelf in favour of the seabed area (Zhudro, 2014).

Opponents of the Conventional Regulation of the Arctic believe that at the present time there is already a sufficiently developed mechanism of legal regulation of the Arctic space, consisting of the international customs. Zhudro considers the current legal regime of the Arctic Ocean as sufficient for the peaceful settlement of disputes – there is no need to create a new common governance of this region. In support of his position, the scholar cites the practice of the United Nations International Court of Justice, which, in assessing the boundaries of the continental shelf, is guided by the rules of customary law as a priority over conventional ones; for example, the principle of natural continuation is the rule that the coastal state's rights with respect to the continental shelf, which is the natural prolongation of its land territory in and under the sea, and exists ipso facto and ab initio, owing to its sovereignty over this territory, and not due to rules stated in the UNCLOS (Zudro, 2014).

Tiunov insists on regulation of the Arctic space by the Arctic powers. The Arctic States, as having primary responsibility for the preservation of the Arctic ecosystem, could develop a mechanism for implementing this responsibility not on the basis of the Convention, but on the basis of international

customary law. Part of the solution to this issue should be the distinction between the neighbouring states of the Arctic shelf in accordance with general international law (Tiunov, 2009).

Avhadeev proposes the delimitation of maritime spaces in the waters of the Arctic Ocean, taking into account the principles of the sovereign equality of states, as well as the principle of inviolability of the territory: 'It is paramount that when resolving issues of jurisdiction of each particular Arctic State with respect to certain spaces of the Arctic, neither the sovereign rights of the arctic State, nor the integrity of its state territory are affected' (Avhadeev, 2016).

Thus, the majority of domestic scientists point out that the legal status of the Arctic is sufficiently settled by the usual legal norms; therefore, the status of the Arctic is unique and is not subject to regulation under the Convention. The arguments of these scientists are supported by the intentions of the Arctic States, formulated in the Ilulissat Declaration. Taking into account the reasoned arguments of supporters of the sectorial regulation of the Arctic space as a historically established customary norm of international law, it is necessary to state the fact that legal regulation does not stand still. Considering that a customary norm of international law is an obligatory rule of conduct for which the subjects of international law recognize legal obligation, that is, a customary rule exists only if such a rule is recognized by subjects of international law, it should be noted that currently, the sectorial principle may lose the characteristics of the generally accepted norm due to the changing approaches of other Arctic and non-Arctic powers with the specified division.

In this respect, Vylegzhanin rightly draws attention to the fact that 'the realities of the modern Arctic do not mean at all the inviolability of the established legal status of the Arctic Ocean', since progressive development is inherent in international law (Vylegzhanin, 2013).

Methodology

For the purposes of the research, an interdisciplinary character of methodology was achieved through the theoretical approach taken, combining various disciplinary-based sources namely political science, legal perspective and international relations for better understanding of the relevant problems and identification of the possible solutions. A comparative legal method is also applied with regard to the national and international regulations applicable within the Arctic region. Taking into consideration the purpose of the research, which is, primarily, the development of the knowledge on the subject matter, an epistemological approach was adopted in order to combine indeed practical aspects.

The first thing to do is to gather the relevant literature and other types of the doctrinal sources that are available with respect to the subject matter. Such sources exist in the form of books, scholars' monographs and journal articles, which are taken from reliable international scientific journals. Additionally, relevant domestic and international legislative instruments are considered including inter alia international conventions and agreements, documents of the relevant international organizations and bodies. However, non-academic or informal resources, for example, various informal reports and documents provided by the parties, also support research. The materials in question are collected from both material and web sources. Literature review creates the preliminary foundation for the research.

Results

The sustainable development of the Arctic space is ensured through joint efforts of the Arctic States together with the establishment of the specific domestic regulations of these powers. In this regard, the analysis of the current legislative instruments of Russian Federation concerning its Arctic area was of crucial importance. Konovalov stated that 'the Arctic area of the Russian Federation cannot exist separately from the world and the country itself, it is built into the system of both global international and Russian processes' (Konovalov, 2011). Indeed, the national policy, and the regulatory framework related to the development of the Arctic region accordingly, cannot remove from its considerations the international legal situation in the region, as well as the relationship with other Arctic States. It is also necessary to take into account the unequal level of the leading powers with respect to the level of technological development, which provides the opportunities for the exploration and exploitation of the Arctic resources and should also be reflected in the domestic policy of the Russian Federation.

Currently, there is no consensus in legal doctrine and practice with respect to the legal status of the Arctic space. The approaches taken in determination of the definition of the region together with its legal status are radically opposite. One approach is to consider the Arctic to be divided between the Arctic States according to the sectorial principle. Another position taken is to entitle the region with the special status due to the presence of specific geographical, geomorphological and climatic features combination. The third approach is to consider the Arctic as a marine space with the status of 'the common heritage of mankind', which is covered by the norms of international law, in particular, the provisions of the 1982 United Nations Convention on the Law of the Sea. The historically well-established principle of sectorial division of the Arctic region is currently undergoing a review by a number of States and International Unions hampering its position to be considered as one of the norms of customary international law. Taking such circumstances into consideration, there is a possibility for the establishment of the new global regime for the purposes of Arctic's management, according to which the area will be regarded as the common heritage of mankind. Such position not only contradicts the strategic and economic interests of the Russian Federation, but also poses a threat to the national and environmental security of all subarctic States.

The abandonment of the sectorial type of division in the Arctic will lead to the loss of sovereign rights of Russian Federation over 1.7 million km^2, and such loss by no means may be reimbursed by the extension of the outer limit of continental shelf (Kovalev, 2009). Furthermore, such delimitation procedure will not resolve any issue regarding the delimitation of the continental shelf between the subarctic States, but only affect the international seabed area, which is recognised by the international community as the common heritage of mankind, what contradicts with the national interests of the Russian Federation. However, despite the criticism of the application to the Commission on Delimitation of the Continental Shelf on the delineation of the outer limits of the continental shelf of the Russian Federation, the decision to submit such application is legally and politically approved with the aim to establish a sustainable implementation of its sovereign rights in the Arctic space.

In 2016, the Ministry of Economic Development of the Russian Federation developed a draft of the federal law 'On the development of the Arctic zone of the Russian Federation', which has now passed the stage of public discussion. In accordance with this project, Arctic zone is allocated as a special object of the government and is not part of the administrative-territorial division of the Russian Federation (part 4, Article 1 of the draft). The concept of 'supporting development zone in the Arctic' was introduced, which is a comprehensive project for planning and ensuring the socio-economic development of the Arctic zone, aimed at achieving strategic interests and ensuring national security in the Arctic, providing for synchronous interconnected use of existing instruments of territorial and sectorial development and mechanisms for the implementation of investment projects, including those based on the principles of public-private partnership.

The project regulates the order of creation, development, financing of projects related to the support zone, the procedure for the construction in such zone. The project also sets the basis for the State regulation in the Arctic area of the Russian Federation in the field of environmental management, environmental protection and environmental activities (Article 20); scientific, technical and innovative activities (Article 21); and social development (Articles 22–24). In general, the Draft Project is a framework regulation setting up the basis for the implementation of regulation in the development of the Arctic region, including environmental management, environmental activities and social development. In any case, the effectiveness of regulation of the Arctic region will depend on how the by-law regulation will be carried out by authorized state bodies.

Nowadays, the directions of the development in the Arctic area of the Russian Federation are indicated in such documents as the Foundations of the State Policy of the Russian Federation in the Arctic for the period up to 2020 and beyond, and the Strategy for the Development of the Arctic Zone of the Russian Federation and Ensuring National Security for the Period to 2020 – Development Strategy of the Russian Arctic. Thus, the Development Strategy of the Russian Arctic demonstrates the current state of the socio-economic development of the Arctic area of the Russian Federation, reflects the key risks and threats in the social sphere, the economic sphere, science and technology, in the field of environmental management and environmental protection. Paragraph 7 of the strategy defines priority areas for the development of the Arctic zone of Russia as follows:

a) a comprehensive socio-economic development of the Arctic area of the Russian Federation; b) the development of science and technology; c) the creation of a modern information and telecommunications infrastructure; d) ensuring environmental safety; e) international cooperation in the Arctic; (e) ensuring military security, protection and security of the state border of the Russian Federation in the Arctic.

Paragraph 12 of the Strategy identifies measures aimed for the development of the transportation system infrastructure of the Arctic, ensuring 'the preservation of the Northern Sea Route as one of the national transport highway of the Russian Federation'. Legal regulation of the Northern Sea Route is carried out in the Merchant Shipping Code of the Russian Federation and the Rules of Navigation in the waters of the Northern Sea Route, approved by the Order No. 7 of 17 January 2013 of the Ministry of Transport of Russia. The administration of the Northern Sea Route deals with the organization of navigation of vessels in the waters of the Northern Sea Route.

In general, it should be noted that domestic legislation needs to be developed and improved, since at present the regulatory acts of the Arctic zone of Russia are obviously not enough. Moreover, the Arctic zone has specific climatic, environmental, socio-economic conditions, the presence of indigenous peoples and nations, which should be reflected at the level of legislation and subordinate regulatory legal acts. It is also important to increase the investment attractiveness of the region in order to implement large-scale projects, and for this, 'due to high labour intensity and capital intensity, significant payback periods, a long time period from the start of investment to profit, a preferential tax regime, flexible tariff, customs, credit, budget and insurance policies' need to be adopted.

Conclusions

In the context of the growing trend of the 1982 United Nations Convention on the Law of the Sea applicability to the Arctic and recognition of the region as open sea rather than as marine spaces of the Arctic Ocean as it was under the sectorial principle together with the consideration of the seabed as an international area, it is of utmost importance for the Russian Federation to continue the usage of the existing contractual international legal mechanisms in order to establish the outer limit of continental shelf and thereby create a legal certainty in the spaces mentioned. In the meantime, it is also important to have an agreement on the delimitation of the continental shelf with the other subarctic States namely Canada and Denmark, because the boundaries of the continental shelf with these countries may coincide in the process of delineation, which fact may be seen upon considering the submissions to the commission made by these States. In this regard, attention should be paid to the positive role of the existing agreement between the USSR and the United States concluded in 1990 as well as the treaty between the Russian Federation and Norway of 2010. Even though these treaties were the results of long negotiations, compromises and concessions, the certainty achieved through the conclusion of such agreements with respect to the delimitation of the maritime borders contributes to the sustainable regulation in the field of jurisdiction in the Arctic.

With respect to the position currently taken in the Northern Sea Route of the Russian Federation, it is advisable to unite efforts with Canada, who is interested in consolidating its rights over the Northwest Passage, in order to form a unified legal position as against the approach taken by the United States (recognising both transport routes as international straits for navigation purposes). The Northern Sea Route, taking into consideration all the specific features of the region including navigational, security and environmental factors, should be seen as a single transport communication route. Such position implies the Russian Federation, due to the complex historical, geographical and environmental factors, should have exclusive rights with respect to the establishment of the regime for passage through the Northern Sea Route, navigation standards and environmental supervision. In this regard, the domestic legislation of the Russian Federation needs also to be further developed and improved because it lacks regulation of the substantial amount of issues in the Arctic area, even though the region has significant climatic, economic and social features for the whole State. The adoption of a comprehensive federal law on the Arctic sector of the Russian Federation may serve as the foundation for further concretization of the legal regulation of the issues arising in the Arctic part of the Russian Federation, both at the specific legislation instruments and in the subsequent by-laws.

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EMPLOYEES' PERCEPTIONS ON EFFECTIVE COMMUNICATION CHANNELS – A CASE STUDY FROM ALBANIAN BANKING SECTOR

Sllavka Kurti[1], Petrit Dollani[2]

[1]*Faculty of Economics, University of Tirana, Albania, sllavkakurti@feut.edu.al*

[2]*Faculty of Economics, University of Tirana, Albania, petrit.dollani@unitir.edu.al*

Abstract

Research purpose. This paper aims at identifying and evaluating the means of communication used and the perceived barriers from employees of the banking system in Albania. The following research questions were formulated: (a) What are the means of communication used in vertical and horizontal communications? (b) Which mean is preferred and valued as the most effective? (c) Which are the barriers that hinder the effective communication flow in these organizations?

Design/Methodology/Approach. A structured questionnaire was addressed to 120 employees of 3 different commercial banks in Tirana, Albania, out of which 100 fully answered questionnaires were received. The questionnaire is divided into three main parts, each of which has two subcategories, and the valuation used for each question is according to the Likert scale from 1 (very few) to 5 (a lot).

Findings. E-mail is the most used communication tool vertically, whereas phone and e-mail are added at the horizontal one. Employee preferences are mostly for e-mail and face-to-face communication vertically and phone and e-mail horizontally. Time pressure and overload of information are perceived as main barriers vertically, whereas distractions are mentioned as biggest hindrance horizontally.

Originality/Value/Practical implications. We suggest that the managers of organizations in the banking sector should properly consider these two communication tools and create suitable conditions for their use. The employees themselves use more of those tools as, according to their perception during communication with colleagues, those tools improve their effectiveness. Other similar studies might be conducted in different types of organizations to point out similarities and contrasts with banking sector.

Keywords: Communication channels; communication barriers.

JEL code: D83.

Introduction

Second-tier banks are typical service organizations and where effective communication is a cornerstone of success. Communication, as an essential organizational component, must be included in the parameters of effectiveness, for both external and internal context. From previous studies, it has been noted that the focus of assessing the effectiveness of communication in the banking sector has been really scarce and only recent years have seen a shift in attention to this sector. But, if we refer to Albania, it can be said that there is no research published about this topic, specifically for the banking sector.

Internal communication, in the simplified sense, refers to interactions between employees, staff, or members of an organization. It includes formal and informal communication, through the adoption of different strategies in order to achieve the objectives. Through effective internal communication channels, superiors may transmit information to their subordinates regarding objectives, procedures, or expectations; they can also receive feedback about the progress of defined plans. Effective information sharing across employees and departments might be guaranteed, by integrating and collaborating among the constituent units of an organization, especially when the latter is complex in structure.

Despite the fact that we have included in our research three largest banks in Albania, we might mention as limitations the number of employees invited to fill the questionnaire and the geographical distribution, only in Tirana and Durres. This was due to limited resources, mainly because of time. In

such further studies, if possible, all banks operating in Albanian market should be considered with wider circle of responders (branches in all bigger cities).

Literature Review

The importance of effective communication in an organization is a topic that has been the focus of some studies in recent years. The starting point was the interest or demand of field scholars and managers to evaluate the effectiveness of communication flow in organizations (Hargie & Tourish, 2004), treating them as a case study. Interest in this topic, especially in 1990s, had increased by up to 30 percent (Donaldson & Eyre, 2000). What appears to be an agreement or common conclusion of the studies is that internal communication makes it possible to integrate any function and coordinate any effort or part of the organization in order to meet the objectives by contributing to the success of the organization (Quirke, 2000; Holtz, 2004). Other studies show that communication also affects the dedication and motivation of employees and, if they are really motivated, they are likely to operate efficiently (Gennard & Judge 2005; Kalla, 2006). Others do not consider internal communication as a soft function, mainly referring to communication between employees, but they already appraise it as a business function (Argenti, 2007). Internal communication creates not only the conditions for a friendly environment in the organization that could potentially affect the motivation of employees (Kalla, 2006), but also, at the general level of dissatisfaction at the employee, the stress that could lead to the latter's decision making to live (Hargie et al., 2004).

From the literature review about communication channels, it is noticed that the attention in recent years has been mainly toward media richness, by trying to categorize them from rich media to lean ones, where IT implementation has played a crucial role in their evolution. Specifically, the most important of the differing logic from the richest means to the poorest communication in the organization are face-to-face, phone, business e-mail, and written documents (Salmon & Joiner, 2005). Face-to-face communication is considered to be richer as a communication tool with verbal and nonverbal elements (Sheer & Chen, 2004), as well as being valued as the employee's favourite (Quirke, 2000). The second rich tool refers to the use of phone, but apparently with the implementation of IT in business, that has changed to e-mail and chat box. Telephone is competing with intranet by the frequency and preference for use (Salmon & Joiner, 2005) or the effect it has on productivity growth and the linkage between physically distributed branches (Bottazzo 2005). Even in relation to written documents or memos, the authors conclude in their studies that the intranet is more effective, more manageable (O'Kane et al., 2004), and costs much lower than written documents (Berry, 2006).

As far as the barriers are concerned, we can say that they are of different forms, the presence of which affects the effectiveness of organizational communication. From the literature review, we have selected some of the present types of barriers that will be considered in our study. In the most typical form in an organization, they appear as (a) structural barriers (Silburyte, 2004): Due to structuring the organization, which may be complex, passing information from one unit to another is hampered and damaged; (b) position-related barriers (Vinten, 1999): Due to hierarchical positions associated with hierarchical levels, lower-tier workers face difficulty transferring information effectively up the scalar chain; (c) semantic language (Droppers, 2006): This is due to the complexity of the used language, jargon, or technical language by different departments or different managerial levels; (d) information overload (Quirke, 2000; Thomas et al., 2006): When the employee has to process a great deal of information during his work activity, he receives from many sources many information or is required by some sources to prepare material or to disseminate information; (e) time pressure (Quirke 2000): The most limited source of an organization, time is potentially bound to the effectiveness of communication, especially the deadlines are those that often undermine the quality of information; (f) prejudice: Known as an obstacle to building good relationships among people (Myers, 2012), it affects communication by not properly evaluating the content, but is based only on some superficial components mainly related to the sender; (g) emotional state (Kim.E, 2004): Because of the different situations that a worker can face in an organization during his work, he can be influenced by his own state of mind, which in turn seems a factor that can potentially impact as an obstacle to the effectiveness of communication; (h) distraction caused by environmental factors that impede the

transmission of information from the recipient to the receiver and ranges from one channel to another (Smith, 2015), for example, in phone or face-to-face communication, it may be a different acoustical noise and Internet interruption in the use of intranet.

Referring to Smith (2008), if an organization wants to improve its network or internal communication strategy or intends to implement an effective communication plan, it must first analyze and evaluate the current state of affairs. Based on this statement, the purpose of this paper is to reflect reality through the perception of second-level banking system employees. We were focused on used communication channels, as well as barriers, like a potential obstacle to the effectiveness of internal organizational communication. This study is based on the perception of employees, which according to Shaw (2004) is considered a valid method for assessing or measuring reality in an organization.

Summarizing the review of literature, the highlight of communication in the organization has been evoked strongly and linkage with productivity, overall performance, and success of the organization is examined and verified in detail. Also, the literature pointed out the main tools of effective communication, as well as the barriers that potentially hinder the effectiveness of organizational communication. These are the premises for our research presented in this paper.

Methodology

This paper aims at identifying and evaluating the means of communication used, as well as the perceived barriers from the employees of the banking system. Specifically, a structured questionnaire was addressed randomly to 120 employees of 3 different commercial banks in Tirana (the biggest in market in terms of turnover), out of which 100 fully answered questionnaires were received. We conducted a pilot testing of research instruments (4 for each bank, 12 in total), before proceeding with physical distribution of the bulk of the questionnaires. Paper and pencil interviewing was conducted face-to-face with hardcopy questionnaires.

The questionnaire is divided into three main parts, each of which has two subcategories, and the valuation used for each question is according to the Likert scale from 1 (very few) to 5 (a lot). Specifically, in the first section, it is required that the bank's employees evaluate, by points from 1 to 5, the channels currently used for communication with superiors and also which channels they prefer or perceive as more effective for communication with upper organizational levels.

Following the same pattern, in the second section, employees are required to assess the means for communicating with other employees in their organization, and further the means they preferred and evaluated as more effective under their own judgment. The last section of the questionnaire is devoted to communication barriers, where again, according to Likert scale, from 1 to 5, employees were asked to evaluate the existing barriers in their organization: barriers to the effectiveness of communicating with the superiors, as well as communicating with other employees. The data were processed through Excel 2010 and presented in graphs.

Information was gathered and processed to address the research questions: (a) What are the means of communication used in vertical and horizontal communications? (b) Which mean is preferred and valued as the most effective? (c) Which are the barriers that hinder the effective communication flow in these organizations?

Results

In this study, 100 valid questionnaires were received from employees of 3 main second-level banks operating in Tirana, Albania. Out of the total questioned, 68 percent were women and 32 percent males. Respondents were all specialists (non-managerial positions) from different departments. Regarding work experience, 26 percent of respondents stated that they had up to 5 years of work, 48 percent had worked 5 to 10 years, and 26 percent stated at least 10 years of work in this sector.

1. Vertical Communication Tools

a) The communication tools used by the employees for communication with superiors

The banking sector employees involved in the survey were asked about the tools they currently use in communication with their superiors. As can be seen from Fig. 1, the most used channel by employees to communicate with their superiors is the intranet, mainly the official e-mail, rated at 4.6 points out of 5 possible. All important information, such as tasks or targets, is communicated to the employees via the official e-mail addresses. Employees also use this communication tool officially to store, process, and trace information. Face-to-face communication remains another form in wide usage, but mainly focused on vertical communication, occurring inside the banking unit. Often meetings are held at the end of the day, every beginning of the month, to discuss and address various problems arising from daily activity, and beyond. As far as the phone is concerned (referred to here as a fixed-line phone), it seems to be less used, especially with direct superior, only for any information that requires fast response. As for written documents, the employees state that they are used very little and in random cases (only 1.2 points), reconfirming what was observed from the review of the literature – the substitution of this tool by e-mail.

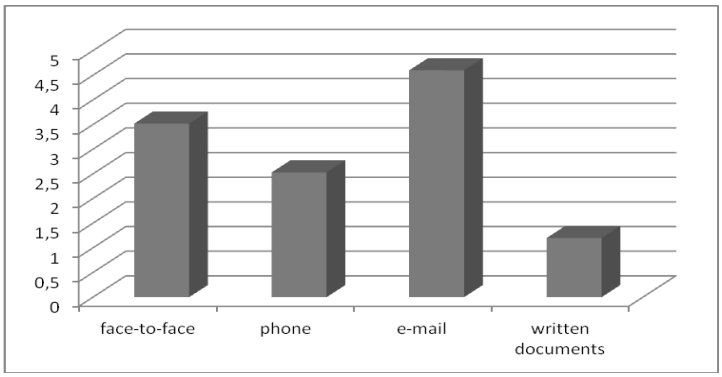

Fig. 1. Tools actually used by employees to communicate with superiors (Source: Authors)

b) Tools preference by employees to communicate with superiors

Fig. 2 shows a great deal of difference between face-to-face and e-mail communication preferences, with over 4 points, in relation to phone and written documents. Apparently, employees, when communicating with their superiors, prefer to use the rich mean, so the clarity of information and consequently the effectiveness will be higher, as a result of better understanding. E-mail itself, possessing several strengths as a communication tool, such as speed, stretch, and time, seems to also be preferred by majority of the employees. Writing documents is ranked last by preference with 0.8 points out of 5 possible, as well as phone, with a score of 1.25 points.

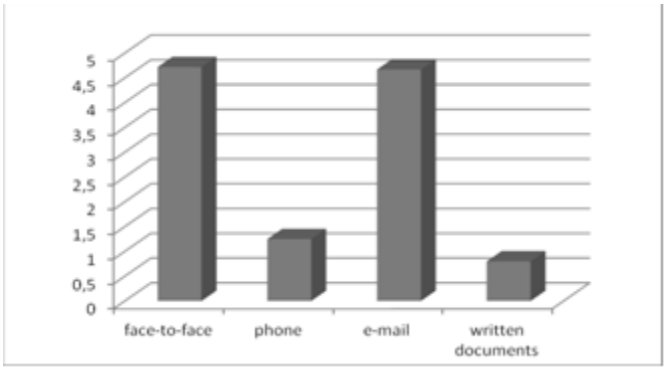

Fig. 2. Tools preference by employees in communication with superiors (Source: Authors)

If we make a comparison of the given estimations for actually used channels and the preferences, from employees' point of view, we would point out that the smaller difference belongs to written documents

(0.4 points) and e-mail (–0.07 points). It indicates that they are satisfied with the amount of use of these communication tools. However, employees prefer to have more face-to-face communications and this shows the benchmark score of points with a value of –1.2 points. The reverse trend is verified for phone communication, where the difference 1.28 indicates that they prefer to use fewer phones in relation to actual use and probably might compensate it for face-to-face communication if they are located within the same building, or e-mail if they are in distant locations.

2. Horizontal Communication Tools

a) Tools used by employees for communication with colleagues

From the graph perspective (Fig. 3), we notice in horizontal communication that the most used tools are face-to-face, phone, and e-mail. Written documents seem to find little use in this type of communication. It seems that being in similar positions and age, the employees are easily able to communicate face-to-face, and therefore the rating they give is high at 4.5 points. They evaluate the current use of the phone slightly higher (4.57 points), where the use of the phone communication services and the ease of the phone communication are provided for specific questions or issues that require immediate answers. E-mail remains a highly present form of communication in this sector with 3.75 points. It has replaced formal written communication that is used very little actually.

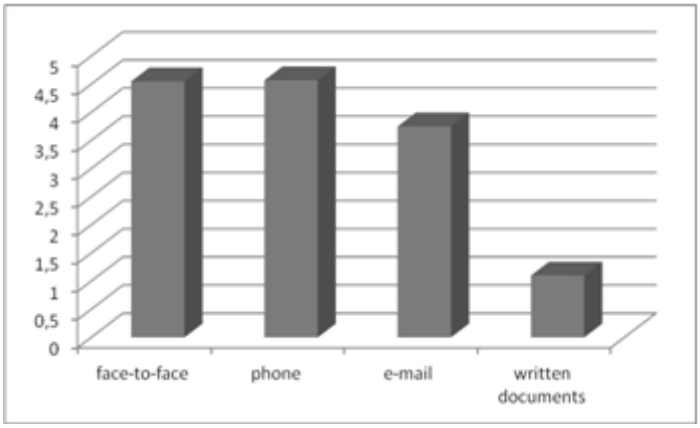

Fig. 3. Tools actually used by employees to communicate with colleagues (Source: Authors)

b) Tools evaluated as effective by employees in communication with colleagues

The next questions were addressed to employees to evaluate the tools of communication, according to their perception of the effectiveness of communication they have with their colleagues. One thing to notice is that, unlike communicating with superiors, where face-to-face communication was the favorite one, in horizontal communication the phone and e-mail are evaluated as two of the most effective tools, in their perception. Specifically, the most effective tool (e-mail) is evaluated with 4.72 points, to be followed by phone (4.2 points). Hardcopy documents remain less rated in this form of communication with a small score of 1.7 points (Fig. 4).

If we are to compare the points given for each de facto communication tool and their respective perception of the effectiveness, we will see that two tools have the greatest difference. The first is related to the conception of face-to-face communication with a difference of 1.4 points. In this type of communication, that is, among colleagues, it is less preferable for its effectiveness. Apparently, employees consider it should be used less than it is practically used in their organizations, because the frequent presence of this form of communication leads to frequent interruption of their daily work, thus affecting the work results. The second tool with dispersion in evaluation is e-mail; a difference of –0.97 points might suggest that employees prefer e-mail usage more in their communications, in order to improve their effectiveness. Also, if the goal is to increase the effectiveness of communication,

though in small differences, they consider that phone should be less used for communications between them, while written documents might be used slightly more.

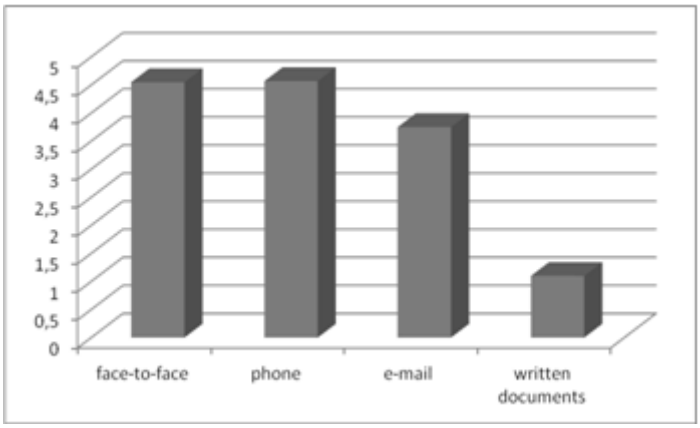

Fig. 4. Tools evaluated as effective by employees in communication with colleagues (Source: Authors)

3. Barriers to Effective Communication

a) Barriers perceived by employees in communicating with the superiors

In addition to the communication tool chosen to be used for transmitting information within an organization, the presence of barriers seems to affect the effectiveness of internal communication. In relation to this issue, employees involved in the study were first asked about the barriers they perceive as present in communication with their superiors. More specifically, their responses are presented in Fig. 5. As can be seen from the data in the graph, employees perceive as main barriers, that related to the pressure of time, which is valued at 4.93 points, and the overload with information at 4.94 points. Apparently, lower-tier employees face constant pressure, deadlines, and overload of information they are required to process and present to their superiors.

Further, employees perceive semantic barriers and those related to the organizational structure as other substantial barriers in communicating with superiors. Banks are complex structures with physical dispersion in many branch locations, as well as several hierarchical levels, and as such generate difficulties in effective communication from higher levels toward lower-level employees. In relation to other barriers that are considered less present in vertical communication, prejudice, distraction, and emotional status got the lowest scores.

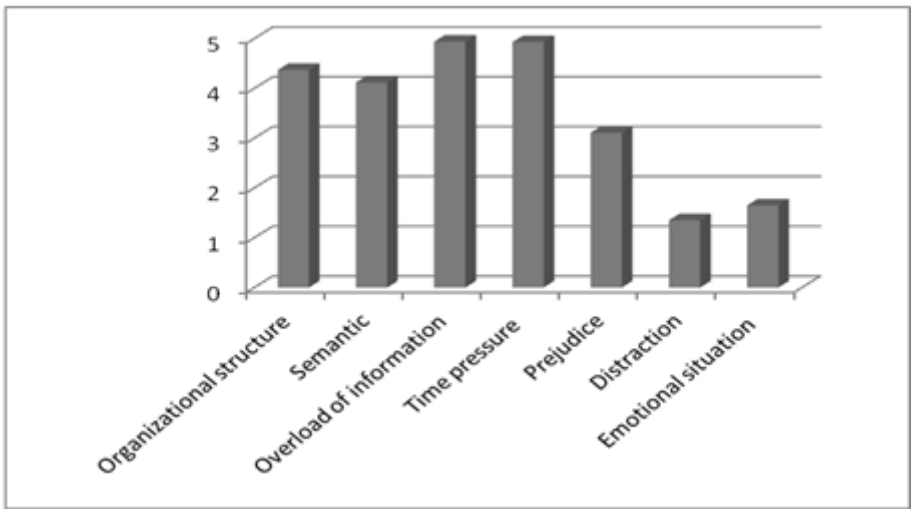

Fig. 5. Perceived barriers by employees in vertical communication (Source: Authors)

b) Perceived barriers by employees in horizontal communication

Unlike vertical communication barriers, when communicating with colleagues, the barriers that employees perceive relate mainly to distraction, which is valued at 4.35 points, followed by prejudices with 3.91 points. It has been seen above that face-to-face and phone communication are the most widespread forms of communications, and it probably explains why these two factors are perceived as barriers present in horizontal communication, where obviously face-to-face communication possesses the disadvantage of work interruption and is time consuming also. The emotional state of the employees, time pressure, and overload of information are as well at relatively high levels of their presence that particularly affect those employees whose job activity is dependent on others (Fig. 6).

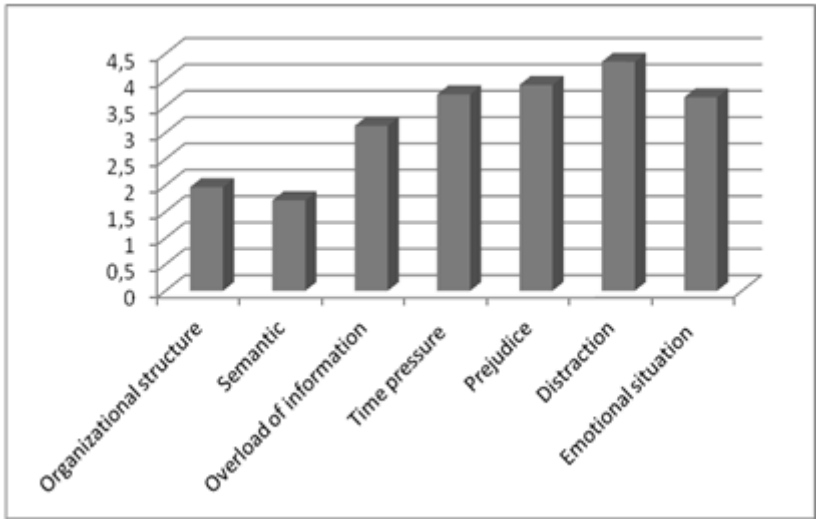

Fig. 6. Perceived barriers by employees in horizontal communication (Source: Authors)

If we were to distinguish between vertical and horizontal communications, the barrier we would notice with the biggest difference is distraction (with an absolute 3-point difference). Apparently, in vertical communication, attention is maximal toward superiors, leaving practically no room for distraction. With regard to organizational structures and semantic, there is a discrepancy of 2.4 points, on comparing vertical versus horizontal communication, convincing that these two barriers are perceived as more typical for vertical communication. The same perception pattern is noticed for emotional state, with a huge difference of 2.025 points. The emotional state is assessed as a barrier to communicating with colleagues, but is not considered as such in vertical communication, where apparently all concentrate, and the fact that communication is made via e-mail is not considered as an important barrier.

Conclusions

This work focused on internal effective communication and brought to attention the importance of proper selection of communication tools, as well as evidence of the presence of barriers in banking sector organizations. Through the review of literature, the importance of communication in the organization was revealed as well as the effect of the latter on productivity, overall performance, and success of the organization. Also, the literature evokes the main tools of communication, as well as the barriers that potentially hinder the effectiveness of organizational communication.

Further, the paper focused on the processing of data collected by questionnaires distributed to the banking sector employees, presented in the form of graphs. From their discussion, it was concluded that employees use different means of communication if they communicate with superiors and other means while communicating with their colleagues. They also evaluate and perceive effective means

such as face-to-face and e-mail when communicating vertically, as they perceive the use of e-mail and phone the most effective in communication with a colleague.

Considering these results, it is suggested that the managers of organizations in the banking sector should properly consider these two communication tools and create suitable conditions for their use. The employees themselves use more of those tools that, according to their perception during communication with colleagues, improve their effectiveness. Regarding the barriers, employees evaluate their presence during internal communication in the banking sector, and even go further by differentiating the barriers in vertical and horizontal communications. Specifically, they evaluate overload of information and time pressure as two of the main barriers in vertical communication, to further complement with organizational structure and semantic barriers. This means that wherever possible, these barriers can be addressed by managers when communicating with their subordinates, in order to guarantee the efficiency of communication between them. If we refer to horizontal communication, distraction comes out as the main barrier present, which might be explained by the fact that the most used channels in horizontal communication are face-to-face and phone, favouring such phenomena.

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CONSUMER INVOLVEMENT IN THE PURCHASING PROCESS: CONSCIOUSNESS OF THE CHOICE

Laima Jeseviciute-Ufartiene

Kauno Kolegija University of Applied Science, Kaunas, Lithuania, laima.jeseviciute@go.kauko.lt

Abstract

Research purpose. Consumer is becoming demanded one in the purchasing process. Thus, consumer behaviour analyses thinking about his or her involvement in the purchase process could be a solution for marketers. This article concentrates on the consumer's choice of food products in the purchase process because the author is interested to clarify the connection amongst choice, purchase and wasting of food. The research purpose is to evaluate the consumer's consciousness in choosing food product in the purchase process.

Design/Methodology/Approach. Quantitative method using questionnaire was applied to 643 respondents whilst implementing formulated aim. Cronbach's alpha analyses of 35 items (0.870) showed reliability of the research.

Findings. The research results indicated that consumer in the food purchase process is low conscious because he or she does not understand that he or she is buying more than what he or she needs and thus some of his or her purchase becomes waste. Consumer's consciousness could be seen in the consumer's lifestyle such as preferences for homemade food.

Originality/Value/Practical implications. The research results could be used in practice and science. Food-producing companies might use some research results making their packaging solutions. The research results could give incites for scientists for future research.

Keywords: Consumer; Involvement; Purchasing process; Customer; Consciousness.

JEL codes: M310; M370.

Introduction

Relevance of the research. Consumer is becoming demanded one in the purchasing process. Thus, consumer behaviour analyses thinking about his or her involvement in the purchase process could be a solution for marketers. Scientist in different countries analysed different consumer's behaviour aspects. Scientists have been researching consumer's behaviour depending on hedonic and utilitarian aspects (Lee *et al.* 2013; Filho, 2012) and have been trying to define how consumer decides and what kind of profile, values and benefits influences their decision to make purchase. Other surveys analysed consumer's decisions, consciousness and preference regarding green purchases (Schuitema & de Groot, 2015). Some researches (Filho & Brito, 2017) analysed rational or emotional decision of consumer choosing eco-friendly green technologies.

Regarding food market, scientists analysed consumer behaviour in choosing certain products such as olive oil (Ghali, 2019), yogurt (Sarti *et al.* 2018; Kytö *et al.* 2019), protein quarks (Kytö *et al.* 2019), and technologies (Filho & Brito, 2017). Some researches indicate (Kytö *et al.* 2019) that package picture in-store, simulations in-store and tasting at home influence to intentions to purchase product. Lithuanian case of green purchase research (Liobikiene *et al.* 2017) was more focused on external factors such as price, green purchase and environment friendly behaviour than on internal factors such as organic foods or healthy nutrition. However, this article concentrates on the consumer's choice of food products in the purchase process because the author is interested to clarify the connection amongst choice, purchase and wastage of food. Another important difference from this research is that Lithuanian case (Liobikiene *et al.* 2017) was analysed using data collected by Eurobarometer but the author of this article conducted this survey by herself. The research of this article is not based on certain food group but is focused on consumer's behaviour according to his or her lifestyle whilst

choosing cook at home or purchasing semi-finished products in the store that is directly related with consumer's consciousness to the healthy food.

The research purpose is to evaluate consumer consciousness in choosing food product in the purchase process. Two main tasks are chosen for research purpose implementation:

- To determine how consumer's involvement in the purchase process is related with lifestyle activities such as cooking at home, buying semi-finished products or purchasing food cooked at shop;
- To find out how consumer's involvement is related with eco/green purchase, importance of food product country of origin and food wastage.

The research purpose has intention to search for prevalence of consumer behaviour. Thus, quantitative method using questionnaire was applied to 643 respondents whilst implementing the formulated aim. Cronbach's alpha analyses of 35 items (0.870) showed the reliability of the research.

The research results indicated that consumer in the food purchase process is low consciousness because he or she does not understand that he or she is buying more than what he or she needs and thus some of his or her purchase becomes waste. Consumer's consciousness could be seen in the consumer's lifestyle such as preferences for home-made food.

Literature Review

Consumer's consciousness. Consumer consciousness in choosing food products in the purchase process could be explained in terms of consumer's values related to their lifestyle and influencing their purchase process. Nowadays, consumer is under pressure of group behaviour because collectivists are more interested in a healthy label (Sarti *et al.* 2018). Recent industrial survey reports show that 90% of online shoppers read consumer product reviews and 83% reported that their purchase decisions are directly affected by the reviews (Weisstein *et al.* 2017). However, consumer is influenced by great amounts of information on the food labels and it makes difficult for consumers to make consciousness in food purchasing decisions (Montandon *et al.* 2017).

Differences in consumptions exist amongst different kinds of products. For example, research of technological products indicates (Filho & Brito, 2017) that if a consumer is becoming a part of green perception groups, his or her utilitarian values are higher than the hedonic ones. Another example could be given from food endorsement programmes. Nutritional endorsement programmes have been applied to raise consumer's consciousness about the role of food to healthy lifestyle, and according to some research (Montandon *et al.* 2017), these programmes do play a role in consumer's decision-making in the purchasing process. This research is focused on food consumption decisions. Thus, consumers' consciousness related to healthy nutrition and sustainability is analysed further.

Sustainability and health-related information on the labels is supplied for consumers to raise their consciousness of healthy nutrition (Nuttavuthisit & Thøgersen, 2017). This is how government and other stakeholders are endorsing products to credence the goods (Atkinson & Rosenthal, 2014; Sarti *et al.* 2018). Consumers frequently self-report having sustainability or health-related preferences (Ha & Janda, 2012; Sarti *et al.* 2018). Furthermore, consumers are diverse because they might choose special products based on the quality of a single item, and also in some cases, they prefer products with the diversity of use and the number of benefits, even if the base product is inferior in quality compared with an alternative (Filho & Brito, 2017). Consumers are purchasing products because of values such as their enjoyment and social status (Schuitema & de Groot, 2015), their interests and preferences (Filho & Brito, 2017). However, consumer's self-reports and actual behaviour might be different because of information, awareness and personal capabilities depended on their lifestyle (Chekima *et al.* 2017; Fischer *et al.* 2017; Sarti *et al.* 2018). Consumers' perception of sustainability and healthy food could be based on individuals' motivations (Prothero *et al.* 2010), socio-demographics (Verain *et al.* 2012), cognitions (Verain *et al.* 2012) and lifestyles (Sarti *et al.* 2018).

Research indicates (Popa *et al.* 2019) that consumer perceive organic foods as safe and nutritious (Ghali, 2019). The consumers prefer to acquire regional organic foods (Lorenz *et al*. 2015). They believe such food to be more reliable, fresh and better tasting (Costanigro *et al*. 2014). Consumers are

becoming more interested in the environment and human health (Laureti & Benedetti, 2018; Ghali, 2019). Consumers' intentions to buy organic product depended on the country of origin of the product (Lorenz *et al*., 2015; Rahman, 2018; Ghali, 2019).

Consumers' involvement. Involvement could be described as consumer's perception of product importance (Zaichkowsky, 1985) that is influenced by his or her values and interests in long term (Rahman, 2018; Ghali, 2019). Involvement with the product could differ from low to high (Park & Keil, 2019). Low involvement means minimum effort from consumer, and oppositely, high involvement is related with consumers' intentions of searching for various information and careful considerations and comparison of different brands concerning motivation and values (Handriana & Wisandiko, 2017; Kim et al., 2019) in the purchase process.

Consumers' purchase process depends on their reaction to different stimuli under different involvement cases (Montandon *et al.* 2017). Consumer involvement with different levels is related with consumer's purchase purpose (Xia & Monroe, 2009). As some scientists observed (Weisstein *et al.* 2017), goal-directed consumers give preference to utilitarian benefits or value, prepare shopping plan and trust on extrinsic motives for their choices. Oppositely, experiential consumers concentrate on hedonic value and internal motives. Thus, consumer's involvement with the product could be understood as important part of consumer's decision processes during supermarket visits (Montandon *et al.* 2017). Taking in account the theoretical consumptions about consumer's consciousness, it could be seen that consumer's involvement depends on consumer's interests or lifestyle and values. Consumer's lifestyle determines priorities of purchasing choice (Sarti *et al.* 2018), and it in some way relates with consumer's consciousness.

It could be expected that consumers would use a greater range of product choice factors if they were highly involved with a product (Montandon *et al.* 2017). Product choice might depend on country of origin, health claims, product endorsements, quality certification, appearance of the food, consumer's claims, health endorsements and green or eco aspects of production (Montandon *et al.* 2017). The results of the research (Montandon *et al.* 2017) showed that for low-involvement purchase, brand played the most important role in consumer decision-making (55.1%), followed by price (26.6%) and the presence of the health endorsement (18.3%) relative to each other. In consumers' decision-making preferences for the high-involvement product (Montandon *et al.* 2017), price was determined to have played the most important role (50.72%), followed by brand (26.84%) and the presence of the health endorsement (22.43%). Thus, there could be assumed that low involvement is related with external influence such as brand rather than health endorsement, which is more inherent for high involvement. Perception of health endorsement could be understood as quality of food for consumer, and it could be counted as consumer's consciousness in the purchase process.

Consumers with no experience or low positive attitude about green attributes could have a positive perception about the convergence and even a higher desire to purchase a product with many attributes, differently from consumers with a negative attitude (Filho & Brito, 2017). Thus, products that qualify for these labels typically must meet externally determined criteria such as third-party certification (Darnall & Potoski, 2017; Sarti *et al.* 2018).

Some research (Sarti et al., 2018) focuses on consumers' macro/micro motivations, demographics, cognition and lifestyles. Studies suggest (Verain *et al.* 2012) that product label influences the purchase of consumer described by demographics such as individual's age, gender, income, education, occupation, social class and place of residence. Even more, consumer's cognition of healthy food is related with labelled products (Verain *et al.* 2012). Thus, external factors should be analysed. External factors influencing consumer's involvement in the purchase process could be pricing, branding, shape and size of the packaging, country of origin, health claims, sustainability claims, product endorsements, quality certification, look and texture of the food, production claims and health endorsements (Montandon *et al.* 2017). Accordingly, consumer's buying motives (Hüttel *et al.* 2018) are micro such as supporting local businesses or individual concerns related to personal or family health and macro such as societal and environmental concern (Kareklas *et al.* 2014). Consumers are interested in information such as the origin of the product (Feldmann & Hamm, 2015). This research is focusing on micro-level motives such as related to organic foods or healthy nutrition, sometimes-

signed eco or green. As consumer perceive an organic labelled food as being safer and healthier (Kareklas *et al.* 2014), for this research, it will serve as consumer's consciousness in choosing the healthy food product in the purchase process.

Sustainable consumption. Sustainable consumption has been understood as consumers' usage of goods and services responding to basic needs. This consumption brings a better quality of life whilst minimising the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product, saving the world for future generations (Kilbourne *et al.* 1997; Joshi & Rahman, 2019).

The results indicate that the drive for environmental responsibility, spirituality and perceived consumer effectiveness are the key psychological determinants of consumers' sustainable purchase decisions (Joshi & Rahman, 2019). According to Italian market research (Sarti *et al.* 2018), just 7% of all market (27.5% collectivists, 10.0% individualists and 3.6% indifferent) are interested in the health-related labels and sustainability of purchased product.

Sustainable purchase is important for the reduction of environmental degradation (Biswas & Roy, 2015) and studies (Liobikiene *et al.* 2017; Cerri *et al.* 2018; Nguyen *et al.* 2018; Joshi & Rahman, 2019) show importance to endorse sustainable purchase behaviour. Consumers tend to ignore the outcomes of their purchase results (Liobikiene *et al.* 2017; Joshi & Rahman, 2019), for example, wasting food and buying larger amount of food than actually needed. This inequality of consumer's perception and actual behaviour about sustainable purchase is called attitude–behaviour gap (Padel & Foster, 2005).

This study is particularly interested just in eco or green aspect and country of origin as quality of product with high involvement and external factors such as commercial influence to bigger amount of purchasing products. At the same time, this research focuses on sustainable consumption factors such as consciousness in choosing the amount of food and food wastage.

Methodology

Consumer's consciousness in choosing food products in the purchase process was researched using quantitative questionnaire. This type of survey is frequently used to find out the prevalence of some consumers' behaviour factors (Montandon *et al.* 2017). Regarding determined purpose of this article, two research questions are raised:

- To determine how consumer's involvement in the purchase process is related with lifestyle activities such as cooking at home, buying semi-finished products or purchasing food cooked at shop;
- To find out how consumer's involvement is related with eco/green purchase, importance of food product country of origin and food wastage.

The structure of the research is shown in Figure 1. The research questions were formed using operationalised thoughts of literature review:

- Socio-demographics (Verain *et al.* 2012);
- Consumer's involvement (Montandon *et al.* 2017);
- Consumer's lifestyle activities (Sarti *et al.* 2018) such as cooking at home, buying semi-finished products or purchasing food cooked at shop as goal-related motivation (Weisstein *et al.* 2017) and family-related motivation (Kareklas *et al.* 2014);
- Eco/green purchase, importance of food product country of origin (Feldmann & Hamm, 2015; Lorenz *et al.*, 2015; Rahman, 2018; Ghali, 2019), external factors from marketing (Montandon *et al.* 2017) and food wastage (Joshi & Rahman, 2019).

Research questions were formed using Likert scale from 1 to 5, where 1 means 'totally disagree', 2 'disagree', 3 'partly agree', 4 'agree' and 5 'totally agree'. The same scale was used to identify the frequency of purchase, where 1 means 'never', 2 'less than once a week', 3 'once a week', 4 'every second day' and 5 'every day'.

People who are shopping for food in their life were selected as the research's respondents. This research is not dividing respondents who are regularly shopping in the store and those who do online shopping. Accordingly, 385 sample size of respondents were calculated using 2,808,901 population in Lithuania (Statistics, 2018), 95% of confidence level, 5% of error level and 50% of response distribution (Raosoft, 2019).

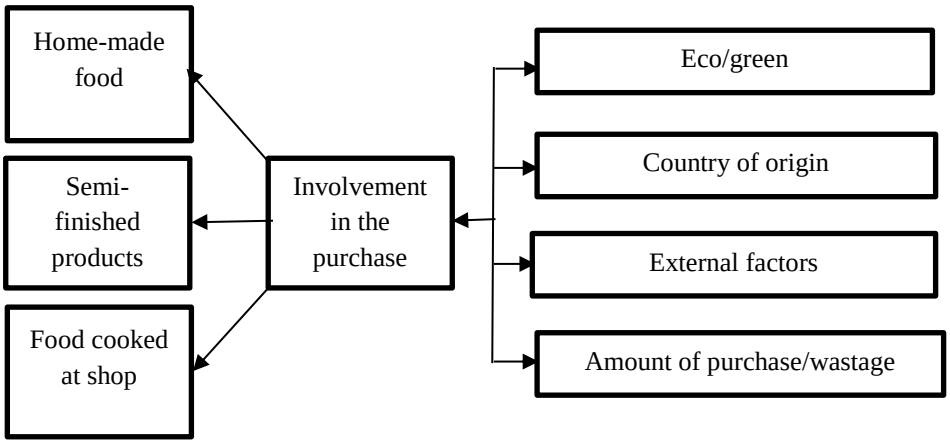

Fig. 1. Structure of the research (Source: made by the author)

The research was conducted in 2018 autumn together with the help of students from the Department of Business, Kauno Kolegija University of Applied Science. Students were printing, distributing and collecting the filled questionnaires. The sample consists of 643 filled questionnaires. Data were analysed using SPSS program and methods such as descriptive statistics and Spearman correlation were used for reliability analyses. Cronbach's alpha analyses of 35 items (0.870) showed the reliability of the research.

Demographic data of the research (Table 1) show that 64.2% of research respondents were women and 36.5% were men. The research data give information about respondents who are Lithuanians with low or average income. These kinds of incomes cover about 60% of Lithuanian working people (Statistics, 2019). Thus, research data are consistent with Lithuanian situation. About 5.8% of the research respondents were with basic education, 41.7% with secondary education, 28.5% with higher education and 22.7% with university education.

Table 1. Demographic data of the research (Source: author's compilation)

Gender		**Incomes**			**Education**			
Female	Male	Till 400 Euro	401–800 Euro	More than 801 Euro	Basic	Secondary	Higher	University
64.2	36.5	36.5	40.7	21.6	5.8	41.7	28.5	22.7

Results

The results indicate low involvement of respondents in the food purchase process. Data in Table 2 shows that consumer is hardly paying attention to the information on the product's label (3.00). The biggest involvement of consumer is shown just with checking the date of expiry (4.02) or checking for product condition if this product is on sale (3.55).

Table 2. Consumer's involvement into food purchase (Source: author's compilation)

Research scale	Mean	StDev	Skewness
Consumer is reading information on products' label	3.00	1.189	−0.033
Consumer is checking the date of expiry	4.02	1.155	−1.158
Checking for product condition during sales	3.49	1.195	−0.529
Checking the condition of product package	3.55	1.261	−0.639
Checking for mistakes in the receipt	3.06	1.324	−0.118

Regarding complied data in Table 2, 'consumer is reading information on product's label' was taken as indicator of low involvement. This choice was made after the evaluation of correlation with other researched factors. It showed stronger correlation with other items shown in Table 2.

Data in Table 3 show that low or high involvement in the purchase process is weakly but statistically significantly correlating with lifestyle such as cooking at home. Very poor and negative correlation is indicated with consumer's lifestyle such as buying cooked food. Analysing such results could state that consumer's lifestyle is related with purchasing involvement but deeper analyses is required; thus, mean value comparison analysis is provided.

Table 3. Involvement into lifestyle activities such as cooking at home, buying semi-finished products or purchasing food cooked at shop (Source: author's compilation)

Spearman correlation between:	Consumer is reading information on products' label (low involvement)	Consumer is checking the date of expiry (high involvement)
Cooking food at home	0.250^{**}	0.303^{**}
Buying semi-finished food products	0.008	-0.206^{**}
Buying food cooked at shop	-0.122^{**}	-0.133^{**}

Note: 643 respondents; * $p < 0.05$; ** $p < 0.01$ level.

The results show that those consumers who read information on the product's label care about healthy nutrition (mean value of totally agree is 3.88 in Table 4), include lots of vegetables and fruits in their nutrition (3.72 in Table 4) and intend to buy healthy food (4.06 in Table 4). Thus, consumers' interested into healthy lifestyle are making them higher involved in the purchase process.

Table 4. Consumers' involvement in the healthy food (Source: author's compilation)

Consumer is reading information on products' label											
Consumer care about healthy nutrition	Mean	N	StDev	Consumer include lots of vegetables and fruits in his nutrition	Mean	N	StDev	Consumer is buying healthy food	Mean	N	StDev
Totally disagree	1.82	22	1.259	Totally disagree	2.66	29	1.289	Totally disagree	2.09	33	1.071
Disagree	2.41	75	1.015	Disagree	2.63	94	1.057	Disagree	2.68	117	1.056
Partly agree	2.75	251	0.941	Partly agree	2.77	205	1.077	Partly agree	2.79	254	0.990
Agree	3.31	185	1.026	Agree	3.09	178	1.043	Agree	3.34	149	1.144
Totally agree	3.88	104	1.244	Totally agree	3.72	129	1.179	Totally agree	4.06	82	1.010

Analyses of consumer's involvement in the country of origin shows that those consumers who are more interested in the origin of the product (totally agree mean value of 3.9 in Table 5) and chooses to consume Lithuanian product (3.94 in Table 5) are more involved in the purchase process. Spearman correlation analyses is used for analysing the consumer's involvement with consumer's care about country of origin (0.452, $p < 0.01$) and consumer's choice for Lithuanian product (0.420, $p < 0.01$). This medium-strength but statistically important correlation confirms that consumers' involvement is higher if we assume that the consumers' interests are related with their lifestyle factors.

Table 5. Consumers' involvement in the country of origin (Source: author's compilation)

Consumer is reading information on products' label							
Consumer cares about country of origin	**Mean**	**N**	**StDev**	**Consumer chooses Lithuanian product**	**Mean**	**N**	**StDev**
Totally disagree	2.15	74	1.143	Totally disagree	2.07	56	1.189
Disagree	2.66	167	0.916	Disagree	2.66	143	1.027
Partly agree	3.01	213	0.988	Partly agree	2.99	261	0.977
Agree	3.66	119	1.061	Agree	3.54	108	1.131
Totally agree	3.90	60	1.337	Totally agree	3.94	64	1.180

Consumers' involvement into the purchase process regarding external factors such as advertisement (discounts or sales) was analysed. Actually, data in Table 6 show that consumers are not buying more because of discount or consumers are not more involved in the purchase process because they are checking for sales' adverts before shopping or because consumer are taking the advert journal before leaving the shopping place.

Table 6. Consumers' involvement in the purchase regarding external factors (Source: author's compilation)

Consumer is reading information on products' label										
Consumer usually is buying more products because of advertising	**Mean**	**N**	**StDev**	**Consumer is checking for sales' adverts before shopping**	**Mean**	**N**	**StDev**	**Consumer takes advert journal before leaving the shopping**	**Mean**	**N**	**StDev**
Totally disagree	2.98	42	1.370	Totally disagree	3.04	74	1.297	Totally disagree	2.93	167	1.200
Disagree	2.95	103	1.115	Disagree	2.81	141	1.127	Disagree	2.83	155	1.056
Partly agree	2.97	194	1.115	Partly agree	2.98	173	1.048	Partly agree	3.10	149	1.101
Agree	3.12	183	1.073	Agree	3.22	146	1.020	Agree	3.24	86	1.127
Totally agree	3.05	115	1.317	Totally agree	3.10	102	1.404	Totally agree	3.22	79	1.374

Spearman correlation analyses between respondents' statements about wasting of food with purchasing amount (0.229, $p<0.01$) and shopping frequency (0.293, $p<0.01$) show weak but statistically significant relation. Accordingly, the results (Table 7) show that those respondents who are buying more food than their family is able to consume, at least once a week and even more frequently, are wasting food.

Table 7. Purchasing amounts and food wastage (Source: author's compilation)

Consumer is buying more food than he/she/family is able to consume								Consumer's food shopping frequency			
Consumer's food shopping frequency	**Mean**	**N**	**StDev**	**Wasting of food frequency**	**Mean**	**N**	**StDev**	**Wasting of food frequency**	**Mean**	**N**	**StDev**
Never	2.77	13	1.536	Never	2.68	88	1.402	Never	3.02	88	1.114
Less than once a week	2.87	60	1.346	Less than once a week	3.09	288	1.092	Less than once a week	3.5	288	0.868
Once a week	3.11	236	1.107	Once a week	3.38	175	1.163	Once a week	3.67	175	0.825
Every second day	3.28	222	1.194	Every second day	3.67	49	1.197	Every second day	3.94	49	0.876
Every day	3.32	103	1.23	Every day	3.42	31	1.177	Every day	3.97	31	1.169

The results of this research (Table 8) indicate weak (0.221, $p < 0.01$) but statistically significant Spearman correlation between consumers 'cooking at home' and 'caring about healthy nutrition'. At the same time, negative correlation is indicated between 'cooking at home' and buying semi-finished (-0.275, $p < 0.01$) or cooked products in the shop (-0.244, $p < 0.01$). These results show that cooking-at-home consumers perceive homemade food as healthy nutrition and do not relate health with semi-finished products. The results of this study allow assuming that cooking-at-home consumers are more consciousness consumer and more involved in the purchasing process than those buying semi-finished or cooked products.

Table 8. Lifestyle related with consumption of food and its wastage (Source: author's compilation)

Spearman correlation between:	**Cooking at home**	**Buying semi-finished products**	**Buying cooked food in the shop**
Consumer care about healthy nutrition	0.221^{**}	-0.036	-0.153^{**}
Consumer is buying more food than he/she/family is able to consume	0.024	0.129^{**}	0.097^{*}
Consumer's food shopping frequency	0.024	0.161^{**}	0.107^{**}
Wasting of food frequency	0.014	0.203^{**}	0.084^{*}
Cooking at home	1.000	-0.275^{**}	-0.244^{**}
Buying semi-finished products	-0.275^{**}	1.000	0.439^{**}
Buying cooked food in the shop	-0.244^{**}	0.439^{**}	1,000

Note: 643 respondents; * $p < 0.05$; ** $p < 0.01$ level.

Conclusions

The results obtained from this research are consistent with those of some researches, (Kytö *et al.* 2019) indicating that food consumptions are low involvement products. However, this research supplements past research by explaining that consumers' interests into healthy food are related with higher involvement in the food product purchase process. Thus, lifestyle studies are important for analysing consumers' involvement.

The results of this research is consistent with those of some other researches (Sarti *et al.* 2018), stating that consumer's involvement depends on consumer's interests or lifestyle and that consumer's lifestyle determines priorities of purchasing choice (Sarti *et al.* 2018). However, the results of this research specifically indicate consumer's lifestyle related with food consumption. The results state that cooking

at home consumers are more consciousness consumer and more involved in the purchase process than those consumers who are buying semi-finished or cooked products.

The research results indicated that consumers of semi-finished products and cooked products in the shop are low conscious because they do not understand that they are buying more than what they needs and thus some of their purchase becomes waste. Consumer's consciousness could be seen in the consumer's lifestyle such as preferences for homemade food.

It should be mentioned that this research focused on Lithuanian consumers and their involvement into the purchase process, their consciousness in choosing healthy products and product amount and consequences regarding bought amounts of food such as wasting food. Deeper research could be made specifying the certain food groups such as grain, vegetables, fruits, meat and fish. This type of research has been conducted in Korea (Kim *et al.* 2019). This could be a purpose for the future research in Lithuania.

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MARKET-TO-BOOK RATIO AND CREATIVE INDUSTRIES – EXAMPLE OF POLISH VIDEO GAMES DEVELOPERS

Rafał Rydzewski

University of Economics in Katowice, Katowice, Poland, rafal.rydzewski@ue.katowice.pl
ORCID: 0000-0003-0562-1167

Abstract

Research purpose. There are many reasons for which a growing interest in research and analysis of video game developers is observed. First, it results from attractive high rates of return on investment in this sector. Second, video games developers, in the author's opinion, constitute a good combination of business and culture which is a ground for development of creative industry. A capital-intensive process of production and the intangibility of video games cause a problem in valuation of developers. Market participants who value future cash flows are in conflict with a historical cost approach used in accounting. This leads to a question of whether the confrontation of these two extreme ways of valuation could be a valuable measure of unrecognised assets for the analysis of video games sector and, as a consequence, of creative industry. The aim of the study is to explore a possible role and use of market-to-book ratio for analysis of this sector.

Design/Methodology/Approach. The study starts with a literature review on market-to-book ratio applied to knowledge-based industries. The second part of the research is a comparison of results obtained for 19 biggest listed representatives of the video games sector in Poland to other sectors of Warsaw Stock Exchange. Further analysis juxtaposes the selected Polish representatives with world's biggest ones in this sector. This will allow to draw conclusions about the usefulness of the examined ratio.

Findings. The research shows that the video games sector represents noticeably higher level of market-to book ratio than other industries in Poland and is comparable to the world's representatives. It can be stated that the market's valuation takes into account unrecognised assets (intellectual capital), which are greatly related to possible future cash flows. What is interesting is that, for some of the selected Polish companies, market-to-book ratio keeps decreasing compared to the levels at IPO. This refers to market efficiency in relation to possible speculative bubbles which companies of this sector are often accused of.

Originality/Value/Practical implications. The obtained results are applicable to the investors, analysts and managers of this sector. The research conducted enables a better understanding of the market-to-book ratio as an indicator of economic standing of creative industry companies and its earnings' prediction.

Keywords: Creative industry; Video game sector; Market-to-book ratio; Intellectual capital.

JEL codes: M40; G10.

Introduction

There are many reasons for which a growing interest in research and analysis of video game developers is observed. One reason is a consequence of global economy trends on which this sector arises. First to mention is the phenomenon of digitalization of human activities. The word digitalization refers to a process of adopting digital technology in social and business contexts to create a value in a new way. It can be conflated with servitization. The often-used interchange term digitization is a process of converting analog signals into digital form. It refers to a technical process of dematerialization of information (Gobble, 2018; Legner et al., 2017).

New generations are brought up in a digital landscape of day-to-day activities with an access to unlimited data. Technologies such as social media and big data are considered to have a core role in contemporary business models with a positive impact on business performance (Bouwman, Nikou, Molina-Castillo, & de Reuver, 2018). In this digital environment, the entertainment industry seems to be particularly interesting. Video games developers, as one of the representatives of this industry, benefit from the intangible – digital – character of the product. It allows for almost instant delivery to the customer and, as a consequence, extremely low distribution costs which are reflected in the

financial situation of the entities. The second trend is the development of the creative sector, to which video game developers belong. Its growth is observed worldwide and it significantly contributes to a gross domestic product, export, growth and sustainable development (Jones, Comfort, Eastwood, & Hillier, 2004; UNCTAD, 2018). The size of knowledge economy reflected by contribution of creative goods and services enhances a level of economic development and competitiveness of economies (Boccella & Salerno, 2016; Gouvea & Vora, 2018). Creative industry such as video games developers questions a common opinion that art in general cannot be a good business. Financial results and forecasts of this sector are interesting especially for investors. According to the Newzoo report, a consumer spend on games will grow with a compound annual growth rate (CAGR) of +10.3 percent between 2017 and 2021 and the 10-year CAGR for the market (2012–2021) at +11.0percent (Wijman, 2018). These two-digit numbers may seem already impressive; however, a quick look at a 5-year growth of market capitalisation of the biggest representatives of this sector shows more spectacular results: Activision Blizzard, Inc. +126 percent; Electronic Arts Inc. +235 percent; Take-Two Interactive Software +229 percent.

The attractive rates of growth, capital-intensive process of production, intangibility of product and its means of production (well-educated employees) make it a challenging ground for financial analysts and investors. They require new methods and approach for valuation and assessing the financial situation of this sector (Torchała, 2017). Video games sector, as a part of creative industry, is driven by innovation, human creativity, skills and talent. It is a carrier of symbolic messages for consumers and is a subject of an intellectual property (Klimas & Czakon, 2018; UNCTAD, 2010). These characteristics are imponderable in financial statements (Niemczyk, 2015) and result in a specific structure of assets and sources of financing. Existence of unreported, intangible assets has an impact on abnormal levels of earnings. As a consequence, this influences equity valuation especially by generation of higher levels of future earnings (Kohlbeck & Warfield, 2007). Existing methods of analysis do not incorporate these characteristics. An importance of this remark can be debatable because the market focuses on a valuation of future – not past and current situation reported in statement. Investors estimate future cash flow based on knowledge of a developer and success of the product, which is in strong conflict with the historical cost approach used in accounting. Nonetheless, it can lead to a question of whether the confrontation of these two extreme ways of valuation – market value and book value – could be a valuable measure for the analysis of video games sector and, as a consequence, of creative industry. The aim of the study is to explore a possible role and use of market-to-book ratio for analysis of this sector. This will allow practitioners a better understanding of the popular indicator and the dependencies in sectors which are driven by creativity and knowledge. Results will also broader the knowledge on the specificity of this sector.

For the purpose of this paper some Polish video games developers have been chosen. In the region of Central and Eastern Europe, game development is on the rise and Poland and other countries are enhancing their technological competitiveness (UNCTAD, 2018, p. 10). According to the United Nations Conference on Trade and Development's (UNCTAD) report, Poland is in 8th place in the top 20 creative goods exporters defined as a developed country, behind the United States, France, Italy, United Kingdom, Germany, Switzerland and the Netherlands. Moreover, statistics for developing countries place Poland in seventh position behind China, Hong Kong (China), India, Singapore, Taiwan Province of China and Turkey (UNCTAD, 2018, p. 21). This shows a potential of this country in the creative industry and places Poland on a leader's position in its region. According to a report 'The State of Polish Video Games Sector 2017', the Polish video games sector is 23th biggest market in the world (by the total game revenues). The population of enterprises operating in this sector in Poland is estimated at 330 entities. Most of them are micro enterprises but there are enough companies listed to make a valuable research. Moreover, video games companies have a high share in IPOs on the Polish stock market. In the period from 2016 to 2018 they constituted 10 percent of all IPOs on the WSE Regulated Market and 24 percent on an alternative market – NewConnect. Moreover, according to the 'State of Polish Video Games Industry 2017', the size of Polish video games market is expected to rise by about 20 percent in the period from 2016 to 2019 (*State of Polish Video Games Industry 2017*, 2017). The results of three sample companies – CD Projekt Red +986 percent; The Farm 51 +210 percent; 11 bit studios +2300 percent (sic!) – may also look impressive. This stresses the importance of scientific research on methods of valuation. Last but not least is the simplicity of most

entities operating in this industry. As Polish video games sector is in its early stage of development, it mostly consists of video game producers and is not engaged in other sectors. This makes Poland an interesting case to be studied in reference to the aim of this study.

Literature Review

Creative industry

Defining creative industry is very context-dependent but the core of all leads to a definition of a part of economy characterized by the 'input of creative individuals' (Innerhofer, Pechlaner, & Borin, 2018, p. 2) or, broader, as an industry in which 'creativity is an input and content or intellectual property is the output' (Potts & Cunningham, 2008). All approaches to defining the creative industry show that it is not homogeneous. A popular approach of Department for Culture, Media and Sport in the United Kingdom focuses both on more 'tangible results' of creativity such as crafts or architecture and industries with an intangible character of a product, for example, film, music, video games (DCMS, 1998, 2001). Other approaches such as cultural concentric circles model emphasise a core role of culture which is a centre of the creative process. This gives primacy of artistic creativity in the process (Carvalho & Cruz, 2017; Throsby, 2008). Despite the confusion, in a clear definition, creative industry can be generally described as a mix of creativity, culture and business. This brings new challenges to management and finance of entities of creative industries.

Challenges in management are placed around tensions between work ethos and practices in both creative and more routinised activities. Managers have to apply management methods to balance the advantages of tight integration and flexibility of the organization. On the other hand, employees engaged in creative processes are encouraged to develop deep work ability to produce a real value and to drive oneself to intrinsic forms of motivation (Newport, 2016). In this context the interest in agile methods that are commonly used in reference to, for example, complex software development is justified. Unlike creativity, the methods have no mechanism for maintenance (Rehman, Maqbool, Riaz, Qamar, & Abbas, 2018). Agile methods such as Scrum and Kanban face problems of changes in requirements; they allow workers to self-organize the teams and are transparent to everyone. These constitute a constant feedback which is crucial for the quality of a deliverable product (Lei, Ganjeizadeh, Jayachandran, & Ozcan, 2017).

The characteristic of creative industry is reflected in a company's financial situation. Accounting is a main 'language' of finance and its outcome is a financial statement, which provides synthetic information on the past and present situation of the company. A scope of this report is defined by law, standards of accounting and accounting policies to protect the interests of the owners. As the innovation activities have a positive impact on companies' performance, it is an important area of interest for a user (Piotrowska, 2016). Because no direct numbers can be given, there is a problem in financial reporting of creative businesses. Creativity of individuals is a main asset and a source of value; however, it is not directly reflected on a balance sheet. One can find possible ways of changing this situation by integrated reporting or supplementing an additional item on the balance sheet (Piotrowska, 2016). Nevertheless, there is no commonly accepted form for disclosure of creativity, knowledge and other characteristics of modern economy, mostly because of problems with the reliability of calculations. Still, creativity and knowledge capital are imponderable and create a gap in financial reporting (Niemczyk, 2015; Wyatt & Abernethy, 2008).

Market-to-Book ratio

Creativity and knowledge are a source of competitive advantage in the global environment. Firms are usually dependent on financial measures which are insufficient to capture this advantage. Limitations of firm performance measures based on financial data are widely discussed in literature and as a result of this, the approach of balance scorecard has been developed. Data collected with the use of accounting do not fully reflect the company's value. The other factor is market capitalisation. The price of share of the company is assumed to be 'equal to the present value of the expected future dividend' (Penman, 1996, p. 237). Comparison of this book value of the firm and its market capitalization creates market-to-book indicator. It is also called a price-to-book ratio (*P*/BV). First, this relation places the market valuation in a numerator. This represents the attitude to valuation which is

based on a future cash flow and methods such as discounted cash flow model. A reason for selecting the market price is that it includes all information and factors available in the market. It refers to the efficient market hypothesis which states that securities markets are efficient in reflecting immediately all available information about individual stocks and a whole market. News by its character is unpredictable and thus 'price changes must be unpredictable and random' (Malkiel, 2003, p. 59). Of course, considering a current state of research, this assumption is debatable and judgement of investors is sometimes wrong which leads to inefficiency (Penman, 1996, pp. 256–257). Behavioural biases influence the market prices (Singh & Shivaprasad, 2018) and 'predictable patterns in stock returns can appear over time and even persist for short periods' (Malkiel, 2003, p. 80).

Second, in the above-mentioned relation, in the denominator there is the book value, which is assets less total debt of the company. It is equal to shareholders' equity. It represents the value of the company calculated with the use of accounting principles. In addition to information about the company's equity, the book value is in relation to stock price movement (Francis & Schipper, 1999). This allows to compare values with each other because they are mutually dependent.

Market-to-book ratio is often compared with the price–earnings ratio (*P*/*E*), which received more academic attention in the past. The works of Fama and French on efficient market document that market-to-book ratio 'explains mean stock returns, accompanied by conjectures that is a proxy for risk or an indicator of distress, the difference between market and book leverage, or a mispriced stocks' (Penman, 1996, p. 235). Both measures – price–earnings and market-to-book – are products of the accounting applied. Accounting rules determine the earnings and book value but do not influence the market price. The models which combine these two measures are explored with promising results (Cheng & McNamara, 2000) because the difference between book value in earnings can add value to prediction (e.g. dividends have an influence on book value but not on earnings (Ohlson, 1995)).

Interpretation of market-to-book ratio can be summarised as follows (Cheng & McNamara, 2000, p. 350; Fama & French, 1992; Penman, 1996, pp. 235–236):

- It is an indicator of expected return on equity.
- It is growth indicator (ROE is a surrogate of growth).
- It is determined by leverage of the company.
- It reflects the production efficiency of a firm.
- It can also explain variation in average returns.

The P/BV ratio base value is 1. This applies when the 'book value is sufficient for all information about future earnings, and thus for price'. When the ratio departs from base value this means that other information has influenced the projection of future earnings (Penman, 1996, pp. 242–243).

Current earnings may fluctuate around their expected value. Because the market-to-book ratio can be interpreted as earnings growth indicator, its main advantage is that it is not affected by the volatility of the company's results. It reflects profitability expected by market participants. This stays in opposition to the mentioned price–earnings ratio which indicates future earnings growth (Penman, 1996, pp. 256–257; Shroff, 1995, pp. 53). Therefore, market-to-book ratio can be a valuable measure for market participants who, by becoming shareholders, possess the book value of the company.

Applying of Market-to-Book ratio to creative industry analysis

Creative industry works with the use of assets that are imponderable for financial statements. Creativity and intellectual capital are considered to be a 'significant hidden value' and it may result in a difference between book and market value of companies (Forte, Tucker, Matonti, & Nicolo, 2017). The difference can determine and measure the unrecognised value because it is the price which the market participants pay for the unreported assets.

Range of this hidden value in creative industry is far bigger than just know-how and information on future sales. It can be knowledge, brand or others. Just to mention some video games developers and other digital entertainment services providers such as YouTube, Netflix, Facebook – these companies also benefit from an immersive experience of their products (losing time perception while using)

(Michailidis, Balaguer-Ballester, & He, 2018; Sharma, Mehra, Kaulgud, & Podder, 2018). Also, as the offered products involve pleasurable activity they can lead to habits or even addictions (Boyle, Connolly, Hainey, & Boyle, 2012). This situation can be priced by the market as well.

As the literature review shows that there is a possibility of existence of unrecognised assets, it seems reasonable to ask the following research question:

> RQ: Does the relation of the market capitalisation and book value of creative industry representatives show the existence of unrecognised assets?

In order to answer this research question and to achieve the aim of this study with regard to the Polish video game developer sector, the following hypotheses are set:

H1: Polish representatives of video games developers are characterized by higher values of the market-to-book ratio in reference to Warsaw Stock Exchange indexes.

> H2: The world representatives of this sector are characterized by a similar relationship of market capitalisation and book value to Polish representatives.

Methodology

Testing of the presented hypotheses is designed as a two-step process. First, the research is based on a comparison of results obtained for selected representatives of video games sector in Poland and the results of other sectors of Warsaw Stock Exchange. Second, the analysis juxtaposes the Polish representatives with world's biggest ones of this sector. This allows to draw conclusions about the usefulness of the examined ratio, test hypotheses and answer the research question.

Research sample

For the selection of Polish video game developers the Forbes report, 'The biggest game producers. Polish video games sector in 2018', has been used. Table 1 shows the biggest representatives with value greater than 5 million USD (currency rates used on the date of publication of Forbes report and obtained from the National Bank of Poland's website). The spread between first and last representatives in the table shows a huge domination of a few entities on this market. Worth to mention is that only one company presented in the table, Techland, is not listed. Therefore it is not included in further study. One More Level has operated in a different sector until 2017 and has been included for control purposes. If game developers had their own level of market-to-book ratio, this company would have different results. Considering an initial stage of the study and an early stage of development of this sector in Poland, it seems to be justified to limit research sample to its largest representatives. There are eight companies listed on Warsaw Stock Exchange in April 2019 which are not included in this study. Their market value on 30 April 2019 was 276 million PLN (64 million EUR; 72 million USD). However, only two of them have been listed before the selected companies in Table 1, which does not allow to obtain a sufficient number of observations.

Table 1. Biggest representatives of Polish video games developers (Source: author's compilation on the basis of Forbes report 'The biggest game producers. Polish video games sector in 2018' and https://www.nbp.pl/)

No.	Name	Value (million PLN)	Value (million USD)*	Value (million EUR)*
1	CD PROJEKT	18 974.1	5 179.9	4 429.5
2	TECHLAND	3 527.0	962.9	823.4
3	11 BIT STUDIOS	1 100.1	300.3	256.8
4	PLAYWAY	805.2	219.8	188.0
5	TEN SQUARE GAMES	620.6	169.4	144.9
6	FARM 51	178.2	48.6	41.6
7	CHERRYPICK	136.6	37.3	31.9
8	CI GAMES	131.5	35.9	30.7
9	VIVID GAMES	115.1	31.4	26.9
10	CREATIVEFORGE	114.7	31.3	26.8
11	BLOOBER TEAM	84.5	23.1	19.7

12	ONE MORE LEVEL	78.1	21.3	18.2
13	ARTIFEX MUNDI	73.5	20.1	17.2
14	T-BULL	69.1	18.9	16.1
15	ULTIMATE GAMES	39.5	10.8	9.2
16	FOREVER ENTERTAINMENT	35.9	9.8	8.4
17	IFUN4ALL	35.1	9.6	8.2
18	JUJUBEE	32.8	9.0	7.7
19	VARSAV GAME STUDIOS	29.8	8.1	7.0
20	FAT DOG GAMES	27.5	7.5	6.4
21	7 LEVELS	27.5	7.5	6.4

*Calculation on the basis of currency rates: EUR/PLN 4.2836 and USD/PLN 3.6684

Selection of a research sample for world video games developers is problematic due to availability of data and developed stage of this sector. Most of the representatives not only operate as a video game developer but have a broader scope of activities. For this reason the author has selected the biggest representatives of world game developers (presented in Table 2). The companies from 1 to 3 are mainly game developers and the companies from 4 to 6 work with a use of similar assets and are also present in the video game developer industry. This selection allows to check the existence of unrecognised asset of Polish representatives in relation to world developers and capital groups involved in this sector.

Table 2. Selected representatives of world video games developers and their market capitalisation (Source: author's compilation on the basis of Newzoo reports and macrotrends.net)

No.	Name	Value (billion PLN)*	Value (billion USD)	Value (billion EUR)*
1	ACTIVISION BLIZZARD	205.8	56.1	48.0
2	ELECTRONIC ARTS	142.2	38.8	33.2
3	TAKE-TWO INTERACTIVE	48.1	13.1	11.2
4	APPLE	3 451.2	940.8	805.7
5	ALPHABET (owner of GOOGLE)	3 359.2	915.7	784.2
6	MICROSOFT CORPORATION	2 964.4	808.1	692.0

*Calculation on the basis of currency rates: EUR/PLN 4.2836 and USD/PLN 3.6684

Market-to-Book ratio data collection and calculations

Because of the popularity of the market-to-book ratio (MTB), own calculations are abandoned on account of bigger range of data analysis. Data have been obtained from Stooq finance data service (Stooq) for Polish video games representatives and Macrotrends portal (Macrotrends) for the world representatives. All ratios obtained are calculated with use of the following formula:

$$\mathrm{MTB} = \frac{P}{\mathrm{BVPS}} = \frac{\mathrm{MCap}}{\mathrm{BV}}$$

where
P is the share price,
BVPS is the book value per share,
MCap is market capitalisation and
BV is the book value of the company.

The data used are monthly market-to-book indicators for Polish stock market and quarterly data for world representatives. The choice is dictated by the availability of data and avoiding high volatility of results related to the volatility of market capitalization of entities. This choice of data offers limited possibility to fully compare the results of the Polish and global sectors; however, in the opinion of the author, it does not affect the final outcomes of this early stage of research. The range of data constitutes all ratios available since 2007.

Results

Calculation of main statistics of market-to-book ratio is presented in Table 3. As expected, in most cases, high level of examined ratio is observed. The median for Polish video game developers is higher than 5 in more than 70 percent of them. Three biggest representatives (bold in the table) are a part of this group. This shows that the market participants pay five times more for equity of the company. One More Level as a 'control' example has ratio with clearly lower level in reference to other examples and with the lowest coefficient of variation.

The comparison of this result to the main statistics of market-to-book ratios of Warsaw Stock Exchange indexes (Table 4) shows that game developers are characterized by noticeably higher values. The index WIG-MOTO, which groups companies of the automotive industry, is the only one that exceeds the mean and median value of 2. On that basis it can be clearly seen that for video game developers there is a market surplus of valuation in relation to other sectors. The results prove the existence of unrecognised assets. It seems to be justified to claim that other information than obtained from financial reporting has influenced the valuation done by market participants.

Table 3. The main statistics for all available data from 2007 to February 2018 for Polish game developers (Source: author's compilation on the basis of obtained data)

Name	Min.	Max.	Mean	Median	Standard deviation	Coefficient of variation
7 LEVELS	7.5	14.2	11.8	11.7	1.9	16%
11 BIT STUDIOS	**2.6**	**23.4**	**8.2**	**7.3**	**5.1**	**62%**
ARTIFEX MUNDI	1.2	8.7	3.8	2.4	2.6	70%
BLOOBER TEAM	0.8	15.3	3.9	3.3	2.6	67%
CD PROJEKT	**2.8**	**73.3**	**10.0**	**8.3**	**9.3**	**93%**
CREATIVEFORGE	3.2	14.1	6.9	5.0	3.9	57%
CHERRYPICK	4.2	32.3	15.1	11.5	9.6	64%
CI GAMES	1.2	10.8	3.8	2.9	2.5	66%
FARM 51	3.2	24.8	7.8	6.3	4.3	55%
FAT DOG GAMES	0.1	13.7	1.0	0.3	1.9	182%
IFUN4ALL	5.6	17.3	8.5	7.5	3.0	35%
JUJUBEE	4.2	59.5	24.2	17.3	14.8	61%
ONE MORE LEVEL	*1.8*	*3.0*	*2.3*	*2.3*	*0.3*	15%
PLAYWAY	**6.9**	**21.8**	**11.5**	**10.1**	**4.4**	**38%**
T-BULL	2.2	35.5	14.4	10.1	10.8	75%
TEN SQUARE GAMES	20.6	71.1	36.5	34.8	16.5	45%
ULTIMATE GAMES	18.3	28.5	23.4	22.4	4.1	18%
VARSAV GAME STUDIOS	1.1	21.8	5.1	3.3	4.0	79%
VIVID GAMES	2.0	18.6	7.8	5.6	5.0	65%
FOREVER ENTERTAINMENT	0.8	58.2	8.0	4.8	9.5	118%

Table 4. The main statistics for all available data from 2007 to February 2018 for Warsaw Stock Exchange indexes (Source: author's compilation on the basis of obtained data)

Name	Min.	Max.	Mean	Median	Standard deviation	Coefficient of variation
WIG	0.72	3.55	1.24	1.20	0.34	28%
WIG20	0.90	3.75	1.47	1.40	0.36	25%
WIG-TELKOM	0.55	2.16	1.08	0.97	0.36	33%
WIG-SPOZYW	0.42	2.61	0.98	0.91	0.29	30%
WIG-PALIWA	0.39	2.57	1.04	0.91	0.44	43%
WIG-ODZIEZ	0.89	1.62	1.33	1.32	0.21	15%
WIG-NRCHOM	0.33	4.80	0.75	0.64	0.50	67%
WIG-MOTO	1.52	2.60	2.12	2.13	0.37	17%
WIG-MEDIA	1.01	3.83	1.66	1.45	0.56	34%
WIG-LEKI	1.06	3.43	1.58	1.40	0.56	36%
WIG-INFO	0.61	3.11	1.43	1.48	0.38	27%
WIG-GORNIC	0.41	4.98	1.22	1.22	0.70	58%
WIG-ENERG	0.51	1.87	0.89	0.84	0.32	36%
WIG-CHEMIA	0.34	2.15	1.39	1.45	0.48	34%
WIG-BUDOW	0.51	6.03	1.23	0.95	0.81	66%
WIG-BANKI	0.69	4.26	1.24	1.02	0.55	44%

An inquisitive analyst can say that this sector is currently in the 'bubble phase'. However, for some of the selected Polish game developers, market-to-book ratio keeps decreasing compared to the levels at IPO (Fig. 1). Indeed, euphoric mood at IPO can be observed and may be subject to further research; nevertheless, verification of these high levels by the market may indicate a certain level of its efficiency.

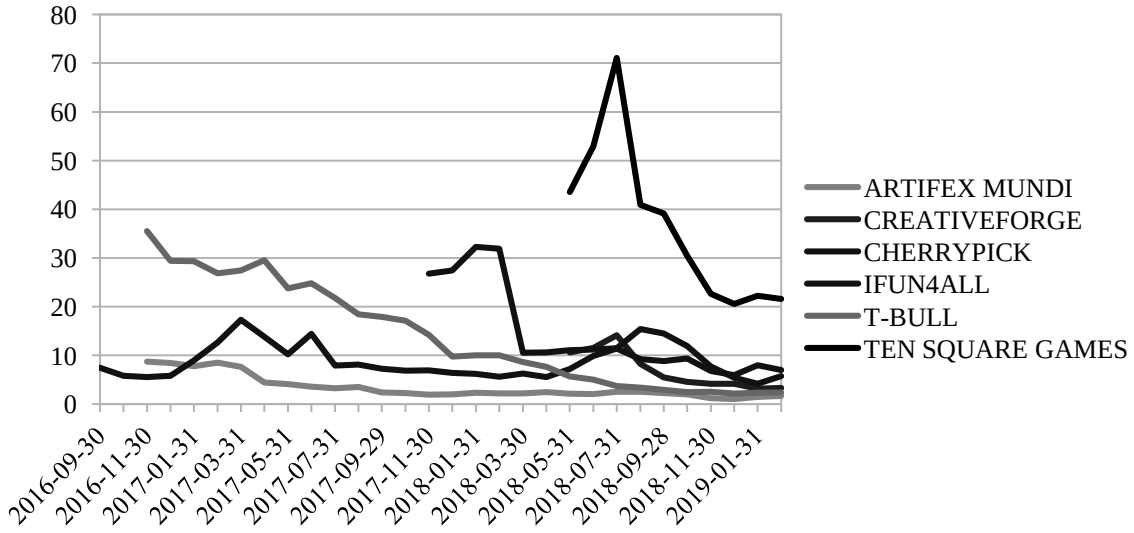

Fig. 1. Market-to-book ratio of selected Polish game developers (Source: author's compilation on the basis of obtained data)

The second phase of the research juxtaposes the Polish representatives with the world's biggest ones of this sector. The main statistics of selected world representatives (Table 5) also represent higher levels of market-to-book ratio; however, they are more toned down. The three game developer representatives have still a relatively high level of coefficient of variation but mean and median are lower than for the three biggest representatives on the Polish market. Nevertheless, the three popular world companies involved in knowledge-intensive activities (Apple, Alphabet and Microsoft) represent the statistics of mean and median around 4 and 5.

Table 5. The main statistics for all available data from 2007 to February 2018 for selected world representatives (Source: author's compilation on the basis of obtained data)

Name	Min.	Max.	Mean	Median	Standard deviation	Coefficient of variation
ACTIVISION BLIZZARD	0.9	6.0	2.5	2.1	1.4	58.2%
ELECTRONIC ARTS	1.5	8.3	4.3	3.7	2.1	49.3%
TAKE-TWO INTERACTIVE	1.0	9.0	3.7	2.7	2.2	60.0%
APPLE	2.6	10.0	5.0	4.7	1.5	30.7%
ALPHABET	2.9	9.6	4.4	4.1	1.4	31.8%
MICROSOFT CORPORATION	2.7	10.2	5.0	4.3	2.0	39.6%

These results do not provide a strong ground for comparison of Polish and world sectors but, again, they show the existence of unrecognised assets which are valued by the market. The noticeably lower results of the world representatives can be a starting point for further analysis of the Polish market to examine whether it is overvalued.

Conclusions

The conducted research has allowed to obtain an answer to the research question: Does the relation of the market capitalisation and book value of creative industry representatives show the existence of unrecognised assets?

Verification of the first hypothesis shows that Polish representatives of video games developers are characterized by higher values of the market-to-book ratio in reference to Warsaw Stock Exchange indexes. The median of market-to-book ratio for Polish video game developers is higher than 5 in case of more than 70% of them. Verification of the second hypothesis does not give a clear answer. Comparison of Polish and world representatives shows only that the game developers represent noticeably higher level of market-to book ratio than other industries. Polish representatives present larger coefficient of variation levels and, frequently, very high values of the examined ratio. The world's biggest representatives are more stable in their market-to-book ratio results. Polish game developers sector can be compared to the world's representatives but this relation requires further study.

However, the research has some limitations such as availability of data which affects the reliability of results. Comparability of results is also limited by the fact that the companies use different business models. Moreover, the research has an exploring character and does not fully explain the relations. To summarize, it can be stated that the market's valuation takes into account unrecognised assets (intellectual capital), which are greatly related to possible future cash flows. The results show the existence of unreported assets that influence the future earnings of the companies of this sector. Such a valuation can be practically applied to assessment of size of competencies and intellectual capital present in the companies and already valued by the market participants.

Furthermore, results may allow academic researchers, practitioners and managers to better understand the market-to-book ratio of video game developer sector and of other sectors of creative industries. It

proves that analysts have to also take into account non-accounting sources of information because they impact the market value significantly more in this sector.

Finally, the research shows there is a ground for further statistical analysis of market-to-book and other financial measures. Similar and broader studies may also be applied to other creative industries. Further analysis may be conducted in reference to valuation of this sector. It would be needed to broader the statistical analysis and research sample including other capital market ratios (e.g. price–earnings ratio). It is worth conducting a study which investigates the market reaction to information about the company and its products in reference to creative activities which are not mandatory in financial statements. Taking into account the availability of data, video games developers are an interesting case of creative industry on the public stock market.

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ENERGY CONSUMPTION OF RAIL BALTICA PROJECT: REGIONAL ASPECTS OF ENVIRONMENTAL IMPACT

Olga Piterina[1], Alexander Masharsky[2]

[1]*The Baltic International Academy, Riga, Latvia, olga@ekoair.lv*

[2]*The Baltic International Academy, Riga, Latvia, a_mash@inbox.lv*

Abstract

Research purpose. The high-speed railway (HSR) construction project in the Baltic States is the largest joint infrastructure project since the restoration of independence of Latvia, Lithuania and Estonia. Rail Baltica (RB) is considered as the most energy-efficient project having the lowest environmental impact. However, the issue of energy consumption of the project was not sufficiently addressed either in the investment justification of the RB construction or in the relevant research works regarding the project. The aim of the current research is to determine the indicators of energy consumption and carbon dioxide (CO_2) emissions intensity of the Latvian section of RB, since they are the key factors of the quantitative assessment of sustainability.

Design/Methodology/Approach. Critical analysis of the academic research works and reports of the official international organizations dedicated to the topic of energy consumption and CO_2 emissions of HSR was conducted prior to the calculation of the above-mentioned indicators. The method of calculation based on International Union of Railways (UIC) was used in order to conduct the cluster analysis within the framework of current work. The main points considered are electricity consumption, carbon dioxide emissions, and level of passenger and freight demand. Statistical databases of UIC and International Energy Agency were used.

Findings. The calculations carried out by the authors of the given article demonstrate substantial figures of CO_2 emissions intensity for Latvian section of the project related to the train load rate and traffic intensity which is evened out only by the CO_2 emissions factor in Latvia.

Originality/Value/Practical implications. On this basis the authors present the directions for future research required for the development of the effective strategy for the Latvian Republic with the aim of achieving the increase in the RB project's ecological efficiency.

Keywords: Energy consumption; Environmental impact; Rail Baltica; Sustainable development.

JEL Classification: L98; Q51; R42.

Introduction

Nowadays, even though sustainable development is considered as focal point in a huge number of memorandums and strategies, the reality clearly envisages that the whole relationship between economic activity and environmental stability is based on the principles of net profit interests. This is clearly reflected in the fact that main strategic decisions being made in respect of the high-speed railway (HSR) network development have been formulated before the assessment of the environmental impact of such project.

The key factors for carrying out the quantitative assessment of sustainability are yet to be standardized. In addition, such factors are not considered to be mandatory for the purpose of infrastructure projects' evaluation. In case they are applied, more often than not, it is done in improper manner even though the minimum lifespan of the project is 30 years. Hence, the indicators used for such projects need to be linked to all long-term sustainable development strategies starting from the initial planning stage.

The carbon footprint caused by the construction of railway infrastructure is often ignored when considering the content of carbon in the transportation of passengers and cargo. Only in 2016 (UIC, 2016) a qualitative comparison of 10 existing methodologies was carried out. It was the first step to investigate how to develop a coordinated approach towards the inclusion of carbon dioxide (CO_2) emissions deriving from infrastructure construction, as well as the rolling stock production process and its further utilization at the end of the lifecycle, into the overall results of carbon efficiency assessment for the HSR project. As a result, it was suggested to include the embedded emissions of CO_2 from the

construction into the overall carbon intensity estimate in order to increase the transparency and consistency of the results.

At the same time, it was noted that density of the traffic is a key factor for the quick payback of emissions from infrastructure construction. Therefore, it is necessary to conduct a rigorous traffic assessment while planning a new railway infrastructure.

According to the official documents (i.e. Regulation (EU) No. 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No. 913/2010 and repealing Regulations (EC) No. 680/2007 and (EC) No. 67/2010) of Rail Baltica (RB), it is emphasized that the common objective of the project is to develop it for the common good of the people, meaning that it has to be of a considerable strategic and economic importance to the EU citizens and economies.

HSR does not have the same characteristics across the regions. In the RB project, trainload indicators also vary depending on the region (Ernst & Young Baltic, 2017). Yet, in the investment justification of the project, due attention was not paid to this aspect.

The purpose of this article is to determine the regional indicators of the energy consumption of the Latvian section of the RB project based on the analysis of the actual electricity supply ability, the pricing policy of Latvia and the potential traffic figures for this region.

For the analysis of energy consumption, the calculation method of International Union of Railways (UIC) was used. The calculation of the carbon footprint payback period from infrastructure construction and rolling stocks production is based on the technique which is similar to determining the time value of money, using discounting of the investment ratio for the project. Discounting was used on a simple basis, since the intensity of emissions from construction affects the environment significantly at present, and the positive effect of reducing emissions is too remote from the moment of construction to the lapse of time.

The study identifies the energy consumption level of the RB project for Latvia, the carbon efficiency of the project in the region, and puts forward recommendations on how to improve the project's conformity assessment in accordance with the requirements of sustainable development, as well as gives further research directions to clarify the project’s passenger and cargo traffic flow.

The article is logically organized in five sections. The next section is literature review, in which different points of view of the ecological impact and carbon footprint of railway infrastructure, including HSR projects, by various specialists in the field and organizations concerned about the issue are illustrated. The third section highlights the methodology and other details of the research conducted for the purposes of identifying the energy consumption of the project and its ecological footprint. The next section presents the assessment results of energy consumption of the Latvian section of the RB project, illustrates the main determinants of the carbon footprint of this section of RB and presents the future trends. The conclusions are presented last.

Literature Review

In the majority of the reports issued by the European and international official entities, HSR is being considered as the most energy-efficient mode of transportation having the lowest environmental impact. However, the examples provided in these reports are usually taken either from a small part of the European projects with a high degree of air transportation replacement (United Kingdom–Paris) or from projects of Japan, Korea and China, which were implemented as a necessary tool for meeting the mobility needs of the population in the regions with high density.

At the same time, important factors leading to the success of these projects’ implementation such as the use of cheap nuclear power for the operation and subsequently low carbon dioxide emission are mentioned only briefly. The comprehensive analysis of the results of the HSR project’s construction, development and operation has not been presented yet.

Anticipating the ex ante analysis of the energy consumption by the Latvian section of RB and its carbon footprint, it is advisable for the reader to become familiar with different research works

conducted in the field. The authors did not focus on the analysis of the HSR projects performances in China due to the following reasons: the significant differences in many aspects of the HSR projects, such as the initial aim behind the projects together with the lack of the need for land acquisition, as well as the scale of construction, contributing to the standardization of the project documentation and the production of railway equipment and rolling stock.

In Garcia Alvarez and Cañizares (2010), the relationship between the speed of high-speed passenger trains, their energy consumption and greenhouse gas emissions is analysed. The authors compare the amounts of energy being consumed by the conventional and high-speed passenger rail systems. It is shown that, on average, high-speed rail systems consume 29 percent less energy than the conventional rail systems.

Jurado (2012) provides a detailed analysis of the energy consumption by trains in the Spanish HSR network, emphasizing that in many cases, rail services with low demand are installed without a vision of competitiveness or complementarity with other types of transport, which leads to a small traffic volume with an ever smaller number of passengers. In too many cases, lines of medium or low traffic offer trains with large capacity, when, on the contrary, it is necessary to increase the number of trains and reduce their individual capabilities.

In respect of carbon dioxide emissions, the previous research illustrated that HSR CO_2 emissions intensity varies between 4.0 and 32.9 g CO_2/PKT in the major European countries (Bueno et al 2016; Seguret, 2014).

The reason for difference in HSR CO_2 emissions among the states is the variation in numbers of such parameters as occupancy levels and the source of train electricity. For example, the French HSR has low CO_2 emissions per passenger-km (pkm) mainly due to the high share of nuclear power in French electricity supply to rail operators (Seguret, 2014). Nevertheless, there is a chance that investments into the rail industry may end up with much less environmental benefits than was expected during the stage of planning, because of several factors. It was argued by Miyoshi & Givoni (2012) that the CO_2 mitigation impact of possible HSR investments in the United Kingdom has become relatively minor in light of the low demand and the high current carbon intensity of electricity in that country is 0.5 kg CO2 per kWh. Their analysis shows relatively limited potential of HSR for reduction in CO2 emissions. In 2033, the overall CO_2 reduction due to HST operation on the London–Manchester route is estimated at 100,000 t CO_2 per annum, which is less than 0.1 percent of the total U.K. domestic transport emissions in 2007. Thus, they demonstrate the train energy consumption (21.45 kWh per km) in cases where the U.K. electricity carbon reaches intensity (0.45 kg CO_2 per kWh).

In the research conducted by Von Rozycki et al. (2003) the CO_2 emissions figures for German HSR network is much worse (69.4 g/pkm), which can also be explained by the fact that the demand is relatively low with a very high level of CO_2 emissions.

Another group of studies criticized the impact analyses of HSR systems for being focused solely on vehicle operation stage (Chester & Horvath, 2009). The point of view taken up in these studies is that significant amount of energy use and CO_2 emissions originates from non-operational aspects of HSR systems, such as construction of stations and infrastructure in general, manufacturing of the vehicles, its maintenance and fuel production. The conclusion is based on a comprehensive life-cycle energy and emissions inventory of different modes of transportation and indicates the fact that the operational energy use and CO_2 emissions of rail systems are nearly two times less than the non-operational one.

Westin & Kageson (2012) went even further in their conclusions on ecological benefits of HSR:

To be able to balance the annualized emissions from the construction of the line, traffic volumes need to be large, and the diverted traffic should primarily come from aviation. An important aspect that was disregarded in the considerable number of researches conducted is the time lag between construction and the years when its emissions will gradually be paid back. Even if emissions from the construction are balanced in the longer term by reduced emissions from traffic, they do have a short-term impact on the atmospheric concentration of greenhouse gases. There is thus an obvious risk that investing in high speed rail will add to the difficulties of keeping the atmospheric content of greenhouse gases at a level

that prevents the mean global temperature from exceeding its pre-industrial level by more than 2 degrees Celsius.

The research by Bueno et al. (2016) also shows that even in the most optimistic scenarios, the reduction in emissions from a modal transition from other modes of transport will not compensate CO_2 emissions associated with the construction of HSR infrastructure and its operation (2.71 Mt CO_2), and it will not contribute to the net energy savings of up to 55 years of operation. As an example, the research provides the figures available after the calculation of CO_2 emissions and reduction of energy consumption over the life of HSR infrastructure (60 years) in the Basque region. The validity of these results suggests that reducing carbon dioxide emissions and energy savings should not be used as a general argument for investing in high-speed rail infrastructure.

In the report provided by Jehanno (2011), the emissions from the construction of the high-speed rail lines were estimated. In the range of 58 t–176 t of CO_2 per km of line and year. Lines with a moderate space and relief constraints (for example in France) emits around 60t of CO_2. By comparison, the carbon footprint of the construction of a 2×3 lane motorway is 73 t CO_2 (with similar transport capacity under the same geographical conditions)... The construction, maintenance and disposal of the rolling stock lead to emissions of 0.8 CO_2 to 1.0 g CO_2 per pkm. Compared with the construction of a car (20.9 g CO_2/pkm), the construction of a HSR-Train is 20 times lower. The construction of an airplane (0.5g CO_2/pkm) is in the same order of magnitude as HSR.

However, all the researchers agree on one thing: in order to reduce the emissions and increase the energy efficiency of the HSR, it is necessary to extend the passenger and cargo traffic to the maximum capacity by attracting riders from air travel, use of cleaner electricity sources and comprehensive planning. The plan of operation for the existing railway system has to be considered as well, because it will be subjected to partial substitution by the newly created one.

Considering the RB project, it is important to mention the lack of research works available, which include analysis of the energy consumption and CO_2 emissions of the future project. Only Humal et al. (2018) have noticed that authors of the investment justification have ignored the requirement of 'Guide to Cost-Benefit Analysis' (EC, 2014) regarding the CO_2 emissions arising out of the project's new infrastructure construction.

According to the authors of this article, the discussion of this issue had to start in advance, because at the present moment two out of the three state participants in the project import electricity rather than generate it. Furthermore, new large power plants are not planned to be built in this region preceding the start of RB operation.

Methodology

The methodological scheme of the given study for the Latvian section of RB consists of three major steps which include the determination of

1. energy consumption and emissions from passenger flows (Ernst & Young Baltic, 2017) scenario;
2. energy consumption and emissions from freight flows (Ernst & Young Baltic, 2017) scenario;
3. total energy consumption and emissions, including annualized emissions from infrastructure construction.

The total amount of CO_2 emissions will be an amount of the required reduction of emissions from other modes of transport, cargo and passengers, which will have to switch to a new railway. In case of further research, the results of this study can serve as the boundary indicators of the net environmental effect of the RB project for the Latvian section of the route.

The study uses these definitions (Union of Railways, 2012):

- One train-km is one train travelling for 1 km. Total train-kms are calculated by multiplying the number of trains by the number of km they travel.

- One gross tkm (tonne-km) is 1 tonne (including weight of wagons, locomotives and cargo) travelling for 1 km. The gross tkm of one train is calculated by multiplying the total weight of the train by the distance it travels.
- One seat-km is one seat travelling for 1 km, calculated by multiplying the number of seats in a train by the distance travelled.
- One passenger-km (pkm) is one passenger travelling for 1 km. The number of pkm is the number of passengers multiplied by the distance travelled per passenger.
- Occupancy (loading) factor is the relation between the number of places occupied and the maximum number of places offered. It can be calculated by dividing the passenger-km by the seat-km.
- Average electricity use pass (kWh/seat-km) is the required amount of energy to transfer one seat travelling for 1 km. This indicator was considered by Jehanno (2011), Jurado (2012) and IEA & UIC (2017) based on the electric consumption of an Alstom AGV (0.033 kWh/seat-km).
- CO_2 emission factor of traction electricity is the well-to-wheel CO_2 emission factor of the electricity used by railway (in kg CO_2-eq/kWh). In this study, this indicator is assumed to be equal to the country coefficient, due to the lack of data on future electricity suppliers for the project. Detailed information on the methodologies, assumptions and data sources, as well as recommendations, for using this factor is found in Koffi et al. (2017).

Energy consumption of freight transport is influenced by logistical, technical and operational factors. Energy consumption per tkm is strongly related to the maximum net tons carried. Total consumption relates to the vehicle's mass because almost all the energy losses of the vehicle (rolling resistance, aerodynamics, gravity and kinetic energy) depend on the vehicle tare.

In estimating the energy consumption of freight flows of Latvian RB section, supposedly representative average values are used (with many limitations). It should be noted that the calculated values of some indicators of freight rail transport presented in global surveys of international organizations often do not correspond to the primary statistical country data or regional research data. Hence IEA ETSAP (2011) estimates global averages for carbon intensity of freight rail to be 15 to 40 g CO_2-eq/tkm (compared with 190–300 g CO_2-eq/tkm for long distance trucking), whereas, according to the methodology proposed in García Álvarez et al. (2013), electric trains are overall as efficient as megatrucks ((0.05 kWh/tkm and 13 g CO_2/tkm) vs. (0.28 kWh/tkm and 73 g CO_2/tkm) over flat profiles. This author's data is taken as the average value of the electric power consumption for freight trains of the Latvian RB section.

In Europe there is a lack of data which describe the trend of energy consumption in the freight sector. EuroStat, one of the largest collectors of those sorts of data, has no such detailed (split) data available as yet.

Electricity consumption and CO_2 emissions for passengers traffic according to the location-based method of the GHG Protocol Scope 2 Guidance are calculated using the following equations:

Annual Electricity Use = Avg. Electricity Use × Train Capacity × Line Length × 365 × Number of train/day (1a)

[kWh]= [kWh/seat-km] × [seats] × [km]

Annual CO_{2eq} Emissions = Annual Electricity Use × CO_{2eq} Emissions Factor (1b)

[kt CO_{2eq}]= [kWh] × [kg CO_{2eq}/kWh]/10^6

Electricity Intensity = Avg. Electricity Use/Occupancy (1c)

[kWh/pkm]= [kWh/seat-km]/[%]

CO_2 Emissions Intensity = Electricity Intensity × CO_2 Emissions Factor (1d)

[g CO_{2eq} pkm]= [kWh/pkm] × [kg CO_{2eq}/kWh]/10^3

The production data collected regarding Latvian RB are given in Tables 1 and 2.

Table 1. Passenger flow data (Source: Ernst & Young Baltic, 2017; Koffi et al. 2017; Jehanno, 2011; Jurado, 2012; IEA & UIC, 2017)

Indicators of RB		**Unit**	**Total section**	**Riga-RIX**
Line length		km	262.42	13.3
Number of trains		Pairs/day	8	36
Train capacity		Seat	402	228
Passenger flow		Thous. pass		
2026	Base case		869	1852
	Low case		690	1470
2035	Base case		930	2085
	Low case		734	1643
2045	Base case		991	2347
	Low case		780	1841
2055	Base case		1050	2628
	Low case		826	2056
Average electricity use		kWh/seat-km	0.033	0.033
Emissions factor for electricity consumption		kg CO_{2eq}/kWh	0.183	0.183

LCA, life circle assessment.

Electricity consumption and CO_2 emissions for cargo traffic according to the location-based method of the GHG Protocol Scope 2 Guidance are calculated using the following equations:

Annual Electricity Use = Avg. Electricity Use × Train Capacity × Line Length × 365 × Number of train/day (2a)

[kWh]= [kWh/tkm] × [tonnes] × [km]

Annual CO_{2eq} Emissions = Annual Electricity Use × CO_{2eq} Emissions Factor (2b)

[kt CO_{2eq}] = [kWh] × [kg CO_{2eq}/kWh]/10^6

Electricity Intensity = Avg. Electricity Use/Loading (2c)

[kWh/tkm] = [kWh/tkm]/[%]

CO_{2eq} Emissions Intensity = Electricity Intensity × CO_{2eq} Emissions Factor (2d)

[g CO_{2eq}/tkm] = [kWh/tkm] × [kg CO_{2eq}/kWh]/10^3

Table 2. Freight flow data (Source: Ernst & Young Baltic, 2017; Koffi et al. 2017; Jehanno, 2011; Jurado, 2012; IEA & UIC, 2017)

Indicators of RB		**Unit**	**Total Latvian section**	
			Border EST–Salaspils	**Salaspils–Border LT**
Line length		km	126	77.4
Freight train capacity, net		Tonnes	1098	1098
Average electricity use		kWh/tkm	0.05	0.05
CO_{2eq} emission factor		kg CO_{2eq}/kWh	0.183	0.183
Number of trains		Pairs/day		
2026	Base case		1	2
	Low case		1	1
2027	Base case		2	3
	Low case		2	2
2028	Base case		4	5
	Low case		3	3
2029	Base case		6	9
	Low case		5	8
2030	Base case		9	10
	Low case		7	9
2040	Base case		11	13
	Low case		9	11
2050	Base case		12	15
	Low case		10	12

The data on the distribution of carbon dioxide emissions by years of operation arising during the construction of the railway infrastructure were adopted by the authors on the basis of the report (UIC, 2016). For corridors that have a share of tunnels and bridges below 30%, a common, conservative and realistic value of around 50–70 tCO_2/km/year would be adopted following the values and the results using the IFEU/Tuschchmid methodology; on a case by case basis, lower emission factors could be used if railway operators could justify such lower values.

However, due to the fact that, according to this methodology, the emissions are distributed by linear depreciation, the authors of the study conducted a procedure for compounding the built-in CO_2 emissions at construction at a rate of 5 percent, similar to the socio-economic discount rate of 5 percent adopted in the investment rationale for the project.

Results

The results of the calculations presented below are based on the methodology described in the previous section. Table 3 shows the results of the electricity consumption assessment, CO_2 emissions of the passenger traffic flow in the Latvian section of RB and their intensity according to the periods referred to in the investment justification of the project.

Table 3. Performance of passenger flow on the Latvian section of RB (Source: author's compilation)

Perspective		Total section				Riga-RIX			
		Annual Electricity use, MWh/year	**Annual CO_{2eq} emissions** kt CO_{2eq}/year	**Electricity use per 1 pkm**, kWh	**CO_{2eq} emissions intensity,** g CO_{2eq}/pkm	**Annual Electricity use,** MWh/year	**Annual CO_{2eq} emissions,** kt CO_{2eq}/year	**Electricity use per 1 pkm,** Wh	**CO_{2eq} emissions intensity,** g CO_{2eq}/pkm
2026	Base case	20 330.6	3 720.5	0.089	16.31	2 629.8	481.3	0.107	19.54
	Low case	20 330.6	3 720.5	0.112	20.55	2 629.8	481.3	0.135	24.62
2035	Base case	20 330.6	3 720.5	0.083	15.24	2 629.8	481.3	0.095	17.35
	Low case	20 330.6	3 720.5	0.106	19.32	2 629.8	481.3	0.120	22.02
2045	Base case	20 330.6	3 720.5	0.078	14.31	2 629.8	481.3	0.084	15.42
	Low case	20 330.6	3 720.5	0.099	18.18	2 629.8	481.3	0.107	19.65
2055	Base case	20 330.6	3 720.5	0.074	13.50	2 629.8	481.3	0.075	13.77
	Low case	20 330.6	3 720.5	0.094	17.16	2 629.8	481.3	0.096	17.60

Based on the calculations provided above, it can be concluded that passenger traffic in the Latvian section of the RB highway has a low energy efficiency level. Energy intensity of one pkm in the first year of entering the railway operation is 89 Wh in the baseline scenario and 112 Wh in the low demand scenario. The intensity of carbon dioxide emissions in the same period will be 16.31 and 20.55 g CO_2-eq/pkm, respectively.

These indicators are somewhat in the middle of the HSR emission intensity range for the EU as a whole. Yet, it is necessary to take into account that Latvia's emissions factor is one of the lowest in Europe and, mainly due to that factor, the emission intensity in the Latvian section of RB does not exceed European indicators (Bueno et al. 2016; IEA & UIC, 2017).

However, if we compare the results obtained with the emission rate indicator in the Lithuanian section of RB in the first year of operation (6.6 g CO_2-eq/pkm), then it becomes obvious that low passenger demand for highway services in Latvia creates a significant negative environmental effect.

The results (Table 3) also show the emissions generated by the shuttle to Riga Airport (RIX). Due to the need for high frequency of traffic, train load will be not more than 18 percent, which leads to an increase in CO_2 emissions in this area to 481.3 kt CO_2-eq/year in the first year of operation. It should be noted that all the airplanes of Air Baltic for 2017 created less CO_2 emissions – 321 kt CO_2 (AIR BALTIC CORPORATION, 2017) – than a 13.3 km railway section from the centre of Riga to the airport would create.

The calculations of electricity consumption, CO_2 emissions of freight flows in the Latvian sector of RB, as well as their intensity over the periods specified in the investment justification of the project, are given in Table 4.

Table 4. Performance of freight flows on the Latvian section of RB (Source: author's compilation)

Perspective		Border Estonia–Salaspils				Salaspils - –Border Lithuania			
		Annual Electricity use, MWh/ year	**Annual CO_{2eq} emissions,** kt CO_{2eq} /year	**Electricity use per 1 tkm,** KkWh	**CO_{2eq} emissions intensity ,** gCO_{2eq} /tkm	**Annual Electricity Use,** MWh/ year	**Annual CO_{2eq} emissions,** kt CO_{2eq} /year	**Electricity use per 1 tkm,** Wh	**CO_{2eq} emissions intensity ,** g CO_{2eq} /tkm
2026	Base case	5 049.7	924.1	0.057	10,.48	6 203.9	1135.3	0.100	18.34
	Low case	5 049.7	924.1	0.067	12.23	3 101.9	567.7	0.057	10.43
2027	Base case	10 099.4	1 848.2	0.057	10,.48	9 305.8	1703.0	0.071	12.99
	Low case	10 099.4	1 848.2	0.073	13.33	6 203.9	1135.3	0.057	10.43
2028	Base case	20 198.8	3 696.4	0.073	13.33	15 509.7	2838.3	0.077	14.10
	Low case	15 149.1	2 772.3	0.071	12.94	9 305.8	1703.0	0.057	10.48
2029	Base case	30 298.2	5 544.6	0.063	11.58	27 917.6	5108.9	0.080	14.67
	Low case	25 248.5	4 620.5	0.067	12.22	18 611.7	3406.0	0.089	16.30
2030	Base case	45 447.3	8 316.9	0.077	14.04	31 019.5	5676.6	0.067	12.22
	Low case	35 347.9	6 468.7	0.074	13.51	27 917.6	5108.9	0.080	14.67
2035	Base case	45 447.3	8 316.9	0.062	11.38	31 019.5	5676.6	0.057	10.48
	Low case	35 347.9	6 468.7	0.061	11.16	27 917.6	5108.9	0.064	11.79
2040	Base case	55 546.7	10 165.1	0.074	13.46	37 223.5	6811.9	0.069	12.71
	Low case	45 447.3	8 316.9	0.074	13.46	34 121.5	6244.2	0.069	12.71
2050	Base case	60 596.4	11 089.1	0.074	13.46	46 529.3	8514.9	0.069	12.71
	Low case	50 497.1	9 241.0	0.074	13.46	37 223.5	6811.9	0.069	12.71

As presented in Table 4, freight traffic indicators for the Latvian section of RB are more efficient than for passenger traffic: the energy intensity of 1 tkm and the emission intensity will be 57 Wh and 10.48 g CO_2-eq/tkm, respectively, in the first year of operation of the project.

After the year 2035, upon reaching the estimated maximum load on the whole section of the Latvian part of RB, the above figures, on average, will constitute 59 Wh and 10.94 g CO_2-eq/tkm, respectively.

It is possible that the project management will still reconsider its views on the combination of passenger and freight traffic in the Latvian section and will consider the possibility of replacing part of passenger traffic by freight or introducing regional passenger trains to replace part of high-speed trains going all over the main line. This would improve both the energy characteristics of the project and the environmental ones. The change in the proportions of the total volume of the organization of traffic on high-speed highways, as one of the strategies for increasing the energy efficiency of HSR, was proposed (Akerman, 2011) for Sweden.

On the basis of the presented calculations, the conclusion regarding the energy intensity of the project of the new railway line could be drawn. The total need for electricity for the Latvian section of the RB can range from 34.2 GWh in 2026 to 130.1 GWh in 2050 and beyond.

Table 5. IEA Key Indicators for Latvia (Source: IEA ,2017)

Indicator	Latvia
Electricity generation, by fuel, GWh	
Gas	2944
Biofuels	823
Hydro	2530
Wind	128
Total	6425
Electricity consumption, TWh	6.98
Deficit (–)/surplus (+), TWh	–0.56
CO_{2eq} intensity of energy mix, t CO_{2eq}/t OE	1.6
CO_{2eq} emissions per capita, t CO_{2eq}/capita	3.47
Electricity prices for industry, Euro/kWh	0.093

As can be seen (Table 5), already in 2017, electricity consumption in Latvia exceeded production by 560 GWh. Therefore, the issue of power supply of a project with high energy intensity (approximately 2 percent of the total energy consumption of Latvia) should now be addressed at the state level.

Infrastructure manager maintenance costs for traction costs are assumed (adopted from Atkins 'Rail Baltica Cost Estimation, Renewal & Maintenance and Benchmarking' study, 2017) to be the following: 15 538 EUR/km/year from total operating expenses of 69 402 EUR/km/year. That is, the cost of electricity will be more than 20 percent in the operating costs of the project.

It should be borne in mind that in Latvia electricity prices are the highest among all the project member states. Furthermore, over the last 5 years, Latvia has been experiencing a rise in electricity prices, even though, most of the energy sources are renewable, which means the cost of production should be quite low. This tendency appears to be odd in comparison to a steady decline in electricity

prices in Lithuania and Estonia. Such a high component of the share of electricity costs, combined with a high price for it in Latvia, can lead to an even greater drop in demand for passenger services for the RB project in the Latvian section.

General results of CO_2 emissions calculations are presented in Table 6.

Table 6. Total CO_2 emissions level of the Latvian RB section (Source: author's compilation)

Perspective		Emissions from constructions, kt CO_{2eq}/year	Emissions from passenger flows, kt CO_{2eq}/year	Emissions from freight flows, kt CO_{2eq}/year	Total, kt CO_{2eq}/year
2026	Base case	16.5	4 201.8	2 059.41	6 277.69
	Low case	16.5	4 201.8	1 491.75	5 710.03
2030	Base case	20.1	4 201.8	13 993.45	18 215.29
	Low case	20.1	4 201.8	11 577.60	15 799.44
2035	Base case	25.6	4 201.8	13 993.45	18 220.84
	Low case	25.6	4 201.8	11 577.60	15 804.99
2040	Base case	32.7	4 201.8	16 976.95	21 211.43
	Low case	32.7	4 201.8	14 561.10	18 795.58
2050	Base case	41.8	4 201.8	19 604.03	23 847.54
	Low case	41.8	4 201.8	16 052.86	20 296.37

The results (Table 6) are the starting point for the subsequent calculations of the environmental effects of the new railway line that results from the modal replacement. The level of modal replacement needs to be specified in accordance with several governmental programmes for the development of more sustainable road transport infrastructure. Moreover, it is necessary to determine the induced demand for the services of the new highway and take into account the need for the state to finance the transport infrastructure, which will supply the new highway with the cargo and passenger flow, maintaining it in proper condition.

Conclusions

The purpose of this research was to assess the energy consumption and CO_2 emissions of the Latvian section of RB project in order to be able to evaluate the environmental contribution of the project in ensuring sustainable mobility. The information provided in this research allows us to draw several conclusions.

First, the Latvian section of the RB highway will require to supply the line with a maximum share of generation from renewable sources or import electricity from nuclear power plants to ensure a low proportion of the cost of electricity in the total operating costs, hence in the tariffs for services. For instance, in Poland a number of nuclear powers are expected to be built by the time the operation of RB starts. In addition, the use of low-emission electric power will minimize the total CO_2 emissions in the event of low demand for line services in the first years of its operation.

The second important conclusion is that in order to assess whether there will be a significant reduction in emissions from a modal shift from regimes with a higher environmental impact, it is important to

conduct a proper life circle assessment using the IFEU/Tuchschmid methodology recommended by UIC. It needs to be done in order to consider not only the operational period, but also the period of construction, maintenance and disposal of RB, which was not done in the investment justification of the project, despite the requirements of the 'Guide to Cost-Benefit Analysis of Investment Projects. Economic appraisal tool for Cohesion Policy 2014-2020'.

This would allow monitoring the carbon footprint already at the stage of procurement of construction works and equipment for the project. Applying a scientific approach and creating a financial incentive would reduce carbon emissions at the construction stage by allocating part of the budget for the construction of RB infrastructure for the purpose of reducing emissions.

Existing carbon arbitrage funds are already offering a powerful incentive to reduce the carbon content of the infrastructure using the most cost-effective solutions.

The introduction of the procurement requirement for low CO_2 emissions in the proposed works and equipment, as well as the encouragement to use carbon arbitration funds during construction, will allow Latvian representatives interested in the development of the project to play a leading role in discussing sustainability and environmental issues of the RB. It will also encourage other project participants to use the tools for the improvement of environmental performance of the new railway line.

One of the directions of future research determined by the results of this work will be the determination of the induced demand for RB services and the variables on which it depends. The investment rationale for the project states that the induced demand is 0 percent throughout the project. On the one hand, this has improved the environmental performance of the project, but on the other hand, this assumption creates high risks of not loading a new line. Furthermore, the awareness of the percentage of new cargo traffic is important for an adequate assessment of both energy consumption and CO_2 emissions, because the energy required for the transportation of new passengers and cargo represents a net increase in energy demand, which partially reduces the benefits derived from the modal transition from road and air transport.

In this context, arguments regarding energy that are put forward in favour of investment in RB may already be controversial: RB can both contribute to sustainable mobility through a major transition from road and air transport to rail, but it can also increase overall mobility, which will result in the net effect being negative.

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EFFICACY OF E-RECRUITMENT PRACTICES ON EMPLOYEE RETENTION IN MULTINATIONAL CORPORATIONS

Solomon Akpoviroro Kowo[1], Olusegun Adeleke ObaAdenuga[2], Olalekan owotutu Sabitu[3]

[1]*Kwara State University Nigeria, Department of Business Administration, kowosolomon@gmail.com*

[2]*National Open University of Nigeria, Department of Educational Foundation, oadenuga@noun.edu.ng*

[3] *Ogun State Institute of Technology, Nigeria, Department of Business Administration, olatoyosim@gmail.com*

Abstract

Research Purpose. The human resource function of firms is faced with the challenges of identifying recruitment practices that contribute to employee retention as a recruitment outcome. The aim of the study was to examine the relationship between E-recruitment practices and employee retention of multinational corporations (MNCs) in Nigeria.

Design/Methodology/Approach. Two research questions were posed for the study and two hypotheses formulated in line with the objectives. Questionnaires were administered to the selected population of the Unilever Nigeria Plc. Corporate websites and commercial websites sites were the E-recruitment practices used to analysed their influence on employee retention. The data were analysed using manual and electronic based methods through the data preparation grid and statistical package for the social science, (SPSS). The study made use of statistical tools such as regression analysis in testing hypothesis and analysis of variance (ANOVA), which helped in the interpretation of results.

Findings The research use analysis to estimate trends that corporate websites and commercial websites were significant in explaining employee retention. The results of this study confirm existing literature that argues for a positive relationship between the two variables. The results also portray that human resource managers should have an understanding of the relationship between E-recruitment practices and employee retention.

Originality/Value/Practical implications. The study seeks to contribute to existing literature on E-recruitment practices and employee retention. The practical justification would be useful to human resource practitioners by making them aware of the current E-recruitment practices and the impact of its implementation to a firm's level of employee retention

Keywords: E-Recruitment; Employee Retention; Corporate Websites; Commercial Websites.

JEL Classification: O15; M51; M15.

Introduction

The retention of high performing employees is a challenge among firms, making the role that recruitment practices play significant (Trivedi & Muduli, 2015). In Nigeria and the world at large, internet usage has become norm and therefore, to attract a good number of applicants, an organisation's best resolve should be to use the internet. The process of recruitment has changed enormously by using the internet technology. It is increasingly being used by both large and small organisations, and it is becoming a favoured medium of both employers and job seekers (Daft, 2000, Kuhn, 2000). The management of recruitment process is made easy through online interview scheduling as the organization have immediate access to application of candidates and the shortlisting of qualified candidates is made easier and faster as any candidate who does not meet the desired qualification of the organisation will be dropped automatically by the system. In addition, there is an automatic correspondence between the organisation and applicant, which makes it easy to get information from the applicant.

This study, therefore, seeks to identify the influence of E-recruitment practices on employee retention, especially amongst multinational corporations. Focus on E-recruitment is based on the fact that it is a

practice that is increasingly being adopted by human resource managers with a long-term goal of achieving competitive advantage through its contribution to the retention of rare and valuable talent. E-recruitment practices are multidimensional and have been identified as corporate websites, commercial websites/job boards and social network sites (Lee, 2005; Girard & Fallery, 2009; Sills, 2014; Kaur, 2015). Corporate websites are web-enabled interface that are used for E-recruitment through the use of a career portal that aims at brand promotion whilst commercial websites are independent of an employer, which gives companies the possibility of outsourcing their recruitment function (Maurer & Liu, 2007).

The study is anchored on the resource based view (RBV) of the firm to explain the value of talent to an organisation. This study aims to identify E-recruitment practices relevant to multinationals and their influence on employee retention. The existence of numerous E-recruitment practices show that employers need to identify the specific practices relevant to their firm in order to acquire and retain rare talent that is considered as a scarce resource that organisations require for competitive advantage (Madia, 2011; Akio, 2005). This study, therefore, aims to identify the E-recruitment practices relevant to multinational corporations in Nigeria and their impact on employee retention. This research seeks to answer the following research questions: (i) What is the relationship between corporate websites and employee retention in multinational corporations in Nigeria? (ii) What is the relationship between commercial websites and employee retention in multinational corporations in Nigeria?

Objectives of the Research are (i) to examine the influence of corporate websites on employee retention of multinational corporations in Nigeria, and (ii) to analyse the influence of commercial websites on employee retention of multinational corporations in Nigeria.

Literature Review

Recruitment comprises all the practices that are carried out by an organisation to acquire human capital through the identification and attraction of employees (Baum & Kabst, 2014). Its purpose is to ensure that acquired recruits remain in a firm for the maximum possible time to contribute to the achievement of overall organisation goals through employee retention (Galanaki, 2002). This is because the ability of a firm to retain talent is considered a source of competitive advantage in addition to enhancing organisational performance (Mahal, 2012). The term E-recruitment has been interchangeably used with online recruitment, electronic recruitment, web-based recruitment and cyber recruitment (Greengard, 2012; Chew, 2004).

Scholars within the human resource field have defined E-recruitment in various ways, which include: the process of acquiring talent online (Allden & Harris, 2013); the formal sourcing of job information online (Galanaki, 2002); the use of online technology to acquire talent either through corporate or third party recruiters (Rao, 2011); an online process of attracting suitable candidates via electronic means (Malik & Razaullah, 2013); and the use of the internet to identify and attract potential employees (Breaugh & Starke, 2000). Talent acquisition in this case is the strategic approach to on board individuals with skills and competencies to efficiently and effectively meet dynamic business needs (Slovensky & Rose, 2012; Mbugua et al, 2013).

Even though this definition is employer oriented, as expressed by the presented literature, it is noticeable that E-recruitment may include an element of job seekers seeking opportunities online (Avebrook, 2012; Madia, 2011; Lee, 2005; Allden & Harris, 2013). Commercial websites allow companies to communicate their vacancies to a large audience; Web 2.0 provides tools that allow for sharing of content such as blogs that may be created by employers or head-hunters, social networks such as LinkedIn and Facebook that offer employer job seeker interaction, Real Simple Syndication (RSS) feeds where information on updated job offers are uploaded onto search engines and video platforms such as YouTube whereby video curriculum vitas can be presented (Boyd & Ellison, 2008).

E-Recruitment practices may, therefore, be classified as; corporate websites, commercial websites and social network sites (Lee, 2005; Parry & Tyson, 2008; McDonnell et al, 2010; Lakshmi, 2013; Sills, 2014; Kaur, 2015 ; Aktor, 2011; Smith & Rupp, 2004; Mukana, 2016). The adoption of E-recruitment practices is often favoured by multinationals in such economies in order to reach a wider scope, as not only is it difficult to acquire talent but also to get expatriates to move to such economies (Trivedi &

Muduli, 2015; Fondeur, 2006). In order to cultivate competencies and skills of the local job market, multinationals develop graduate trainee programmes whereby the use of E-recruitment practices is effective in screening graduates who can undergo entry-level training and potentially be absorbed by the firm (Peltokorpi & Froese, 2015; Mbugua, Waiganjo & Njeru, 2013; Boyd & Ellison, 2008; Girard & Fallery, 2009; Gazzawi and Accoumeh, 2014).

Levels of Employee Retention in Multinational Corporations: Retention occurs as a result of voluntary practices carried out by an organisation (Chew, 2004) to create an environment that would engage their employees on a long-term basis or to the extent to which their contracts state (Allen, Bryant & Vardaman, 2010). Skilled employees have, therefore, become a major factor that differentiates firms, as their expertise has the potential to provide competitive advantage within international markets (Chiminade, 2007; Mbugua, Waiganjo & Njeru, 2015). Voluntary turnover is when an employee exits the firm under their own terms, commonly caused by job dissatisfaction and old age, whereas involuntary turnover is when an employee is removed from duty by the firm's management through promotions, shift to other department(s) or expulsion from duty by senior management (Cappelli, 2001; Malik & Razaullah, 2013 ; Koo & Wati, & Jung, 2012 ; Rao, 2011). Employee retention with regard to early work adjustment is dependent on the recruitment practices that better prepare employees for early work experience compared to other practices (Reilly, Brown, Blood & Malatesta, 1981; Mahal, 2012)

Influence of E-Recruitment Practices on Employee Retention**:** Kashyap and Rangnekar (2014) concluded that the source through which employees are obtained are usually closely tied to the type of job opening because persons recruited through certain sources would have more accurate information about the background of the company and job information (Rogers, 2015). Applicants are, therefore, able to make informed decisions whether to proceed with the application for a job. Mbugua, Waiganjo and Njeru (2015) found that the use of strategic employee recruitment influenced employee retention through the use of associations, psychometric tests, website, targeting specific professionals and utilisation of technologies.

The information that a company presents through their E-recruitment platforms communicates the job detail expectations to potential recruits, which greatly influence the decision to apply for a job and, hence, the length of stay within that particular job with high chances of employee retention (Trivedi & Muduli, 2015; Peltokorpi & Froese, 2015; Kashyap & Rangnekar, 2014). Job analysis, comprising detailed descriptions and specifications of a job vacancy, and the means through which a job vacancy is communicated are the major determinants of the levels of employee retention a firm will return from the candidates who will be hired (Sills, 2014; Masese & Kinange, 2016; Trivedi & Muduli, 2015; Fondeur, 2006).

Influence of Corporate Websites on Employee Retention: Different schools of thought have been found with regard to the use of corporate websites and their relationship to employee retention. Some have demonstrated the existence of a positive relationship and the absence of a relationship. Through a study focused on higher education institutions, the use of E-recruitment as a human resource information system contributes to employee retention through profiling personnel by analysing their strengths and weaknesses (Rogers, 2015). In addition, Rogers argued that the use of human resource information system enables the business unit to strategically plan on human resource activities that maximise employee retention (Pollitt, 2007; Nwasha, 2013; Trivedi & Muduli, 2015; Rogers, 2015) Besides the use of corporate websites having a positive relationship with employee retention, some research has observed the absence of a relationship between the two as E-recruitment has been found to be a practice that only provides advantages such as large geographical access of potential employees, time and cost effectiveness, ease of access to candidates with additional skills in computing, ease of use and faster response time to job vacancy postings (Galanaki, 2002; Cappelli, 2001; Mukuna, 2016).

Influence of Commercial Websites on Employee Retention: Commercial websites may take form of independent firms or consultants. Depending on the nature of a firm, commercial website owners could either act as a hiring consultant, recruit on behalf of an employer for a fee and post jobs on their website without approval by employers or partake in both the business of recruitment consultants and

job boards for any employer (Lee, 2005). Scholarly articles reviewed have revealed the existence of a positive relationship between the use of commercial websites and employee retention. The use of commercial websites to outsource the human resource recruitment function of a firm allows for the multiple screening of candidates by both the recruiting firm and the employer. The use of commercial websites such as Bayt.com equips recruiters with superior tools to filter through such passive candidates and acquire those that best fit their firm, hence, higher chances of being able to retain such employees whose skills match organisational needs (Lee, 2005). Commercial websites tend to disclose the compensation policies that employers are offering for specific job openings (Masese & Kinange, 2016; Smith & Rupp, 2004; Galanaki, 2002; Allden & Harris, 2013). The impact of disclosing a firm's compensation details should, therefore, be considered by commercial website owners, based on whether or not the employer wants the details to be presented, with knowledge on the potential implications (Masese & Kinange, 2016; Venkatesh et al, 2003).

Resource Based View of the firm: The (RBV) of the firm argues that the attainment and retention of sustainable competitive advantage is derived from a firm's resources and capabilities (Penrose, 1959). Even though similarities in human resource practices may cut across various organisations within a particular market, firm-specific resources and needs develop over time, creating uniqueness that may not be easy to imitate. The theory applied to the study seeks to extend the RBV of the firm to E-recruitment practices and tries to explore its linkages to employee retention. Through the development of the capabilities of E-recruitment, its antecedents and outcomes, the firm can stay ahead of its competitors (Rogers, 2015), hence, leading to (VRIN) valuable, rare, non-imitable and non-substitutable. creating internal firm capabilities that are not easy for other firms to imitate (Barney, Wright & Ketchen, 2001). This provides humble resource systems with the potential to contribute to competitive advantage that is sustainable through the development of firm and specific human resource competencies. It is for this reason that talent, which is a scarce resource, is an element that organisations globally compete for to reflect back on their goals and competitive advantage within the markets they operate in. This theory is relevant to the study because it demonstrates how a firm derives sustainable competitive advantage through the exploitation of the scarce characteristics of individuals who are talented.

Methodology

This research adopted the survey research, the experimental research, and the expo factor method was adopted. Data were obtained through the use of questionnaire. The questions were designed in simple and clear language to remove ambiguity. The responses to each statement will also be based on a 5-point Likert ordinal scale. The responses generated through the questionnaire assisted the researcher to address the research problem, objectives, questions and hypothesis (Easterby et al, 2011). The population of this study was limited to human resource managers of Unilever Nigeria PLC, Lagos state, Nigeria. For this study, the sample size was determined using Marl Slovin formula. This formula is considered with applying a normal approximation with a confidence level of 95% and a limit of tolerance level (error level) of 5%.

The technique used for selecting the sample for this study is simple probability sampling technique.

Primary and secondary data are obtained and used for this study. Questionnaire was used as an instrument and structured through the specific objectives of this study, and the degree of responsiveness of the respondents was measured on a 5-piont Likert scale of strongly agree (SA) = 5, agree (A) = 4, undecided (U) = 3, strongly disagree (SD) =2, and Disagree (D) =1. The data were analysed using manual and electronic based methods through the data preparation grid and statistical package for the social science, (SPSS). The study made use of the descriptive analysis to achieve the mean, frequency distribution and percentage result of the research work (Creswell, 2009). The study used statistical tools such as regression analysis in testing hypothesis and ANOVA, which helped in the interpretation of results.

Table 1. Distribution of respondents and response rate (Source: author's own compilation 2018)

Respondents Occupation	**Questionnaire Administered (sampled)**	**Percentage of Total Response (%)**
Top level	10	90.9
Middle level	1	9.1
Lower level	-	-
Total	11	100.0
Gender/category	Questionnaire administered (sampled)	Percentage of total response (%)
Male	9	81.8
Female	2	18.2
No. of returned	11	100
No. of not returned	0	0
Total no. of questionnaires	11	100

The research questionnaire was administered to (11) respondents (Human resource managers), which is the sample size representing the study population of the firms. Eleven questionnaires, representing 100% were returned. The table above shows the details at a glance. The findings reveal that nine respondents, representing 81.8%, were male and two respondents, representing 18.2%, were female. This implies that majority of the respondent were male. Unilever Nigeria PLC, Lagos state, Nigeria, has only two female human resource managers.

The study revealed that five respondents, representing 45.5%, had 5 years of working experience and six respondents, representing 54.5%, had between 6 and 10 years' work experience. This implies that majority of the respondent had between 6 and 10 years of working experience. On the basis of management category, it was revealed that 10 respondents, representing 90.9%, were top level managers and one respondent, representing 9.1% was, middle level manager. This implies that majority of the respondent were top-level managers. More so, the findings of educational qualification of the respondents revealed that 11 respondents were MBA/Bsc holders. The respondents were classified based on their age difference, and the findings show that four respondents, representing 36.4%, were aged between 21 and 30 years, five respondents, representing 45.5%, between 31 and 40 years; and two respondents, representing 18.2%, between 41 and 50 years. This implies that majority of the respondent were between 31 and 40 years.

Table 2. Descriptive statistics of E-recruitment practices on employee retention of multinational corporations. (Source: Author's own compilation 2018)

Responses **Corporate Websites and Employee Retention of MNCs**	**Total (N)**	**Mean**
The organisation has a company website that has company information and history, which promotes its brand	100	3.46
The organisation has a company website that has information on product/service offering, which promotes its brand	100	2.89
The organisation website has a recruitment portal that provides candidates with relevant job information.	100	3.68

Candidates can view updates on the progress of their applications through their accounts on the recruitment portal.	100	3.85
Managers are involved in the final online reviewing and screening of qualified candidates before interviews are held.	100	3.39
Commercial Websites and Employee Retention of MNCs	**Total**	**Mean**
Commercial website owners conduct screening tests to ensure employer legitimacy	100	3.45
The organisation is involved in the short listing of candidates obtained through commercial websites before job assignment	100	3.57
The online recruitment agency possesses screening tools that filter candidates before they are sent to the organisation for job assignment	100	2.99
The organisation is involved in the final recruitment of candidates obtained through commercial websites before job assignment	100	3.73
The organisation is aware that its job vacancy information could be found on other websites without its consent	100	3.89
The organisation outsources the recruitment function to online recruitment agencies	100	3.79

Results

Hypothesis One

Ho: Corporate Websites does not influence Employee Retention of Multinational Corporations in Nigeria.

Hi: Corporate Websites influence Employee Retention of Multinational Corporations in Nigeria.

Table 3. Model Summary (Source: author's own compilation)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.838	.702	.669	.465	2.313

Predictors: (Constant), Corporate Websites

Dependent Variable: Employee Retention

The result from the model summary table revealed the extent to which the variance in Employee Retention can be explained by Corporate Websites is 83.8% i.e. (R square = 0.838). The ANOVA table shows the Fcal 21.251 at 0.000 significance level.

Table 4. ANOVA (Source: author's own compilation)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.598	1	4.598	21.251	.001
	Residual	1.9	9	.216		
	Total	6.545	10			

Table 5. Coefficients (Source: author's own compilation 2018)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.842	2.996		.949	.368
	Corporate Websites	.816	.177	.838	4.610	.001

Dependent Variable: Employee Retention

The coefficient table above shows that the simple model that expresses how Corporate Websites affects Employee Retention. The model is shown mathematically as follows: Y = a+bx where y is Employee Retention process and x is Corporate Websites, a is a constant factor and b is the value of coefficient. From this table therefore, Employee Retention = 2.842 + 0.816 Corporate Websites. This means that for every 100% Employee Retention, Corporate Websites 81.6%. The significance level below 0.01 implies that a statistical confidence of above 99%. Since our P value (0.005 is greater than the calculated value), Thus, the decision would be to reject null hypothesis (Ho), and accept the alternative hypothesis (H1) which implies that Corporate Websites influences Employee Retention.

Hypothesis Two

Ho: Commercial Websites does not affect employee retention in multinational corporations in Nigeria

Hi: Commercial Websites affect employee retention in multinational corporations in Nigeria

Table 6 .Model Summary (Source: author's own compilation)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.446	.199	.170	.638	.320

Predictors: (Constant), Commercial Websites

Dependent Variable: Employee Retention

The result from the model summary table revealed the extent to which the variance in Employee Retention can be explained by Commercial Websites is 44.6% i.e. (R square = 0.446). The ANOVA table shows the Fcal 6.937 at 0.000 significance level.

Table 7. ANOVA (Source: author's own compilation)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.393	1	.393	6.937	.000
	Residual	.440	28	.301		
	Total	.833	29			

Table 8. Coefficients (Source: author's own compilation)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.772	.225		4.181	.000
	Employee Retention	.667	.961	.446	2.634	.004

Dependent Variable: Commercial Websites

The coefficient table above shows that the simple model that expresses how Commercial Websites affects Employee Retention. The model is shown mathematically as follows: Y = a+bx where y Employee Retention and x is Commercial Websites, a is a constant factor and b is the value of coefficient. From this table therefore, Employee Retention = 0.772 + 0.667 : Commercial Websites. This means that for every 100% of Employee Retention, Commercial Websites contributed 66.7%. The significance level below 0.01 implies that a statistical confidence of above 99%. Since our P value (0.005 is greater than the calculated value), Thus, the decision would be to reject null hypothesis (Ho), and accept the alternative hypothesis (H1) which implies that Commercial Websites affects Employee Retention

Discussion of findings

Descriptive analysis showed that corporate websites were the most relevant E-recruitment practice and including firm information was its most relevant feature. However, majority of firms under study with corporate websites did not allow candidates to view the progress of their applications. Multiple regressions were performed to assess the relationship between corporate websites and employee retention. Corporate websites were significant in explaining self-selection and early work adjustment. Research has shown that corporate websites could have either a positive relationship (Mukuna, 2016; Peltokorpi et al., 2015) or no relationship with employee retention (Capelli, 2001). The results of this study confirm the existing literature that argues for a positive relationship between the two variables. We can, therefore, conclude that corporate websites are the key E-recruitment practices adopted and the success of its use lies on the firm's ability to provide information about their history, vision and mission and product offering.

This finding further confirms the importance of a firm's reputation and core values in the attraction of talent. As corporate websites were significant in explaining self-selection and early work adjustment, their use should be reinforced by developing employee skills. Moreover, Descriptive analysis indicated that commercial websites were also relevant to employee retainment in multinational corporations. However, analysis showed that commercial website of MNCs is significant in explaining the levels of employee retention. The results obtained from this study correspond with the literature that E-recruitment practice is significant in explaining the level of employee retention (Lee, 2005; Smith & Rupp, 2004; Masese & Kinange, 2016). The findings will be an immense benefit in gaining opportunity for jobs to be advertised in global, local and niche market; verified and technically good candidate; and reduced cost compared to print advertisement. To the applicants, it provides a wide range of job opportunities, quick and easy access to information on job opportunities.

Conclusions

Corporate websites and commercial websites sites were the E-recruitment practices used to analyse the influence of employee retention in this research. The results showed that corporate websites and commercial website were significant in explaining employee retention. The retention of high performing employees is a challenge amongst firms, making the role that recruitment practices play

significant. Compared to other employee retention management practices, recruitment practices are the foundation to the quality of new recruits absorbed by a firm and, to a greater extent, signifies the level of employee retention by a firm. The adoption of E-recruitment practices is often favoured by multinationals in such economies in order to reach a wider scope, as not only is it difficult to acquire talent but also to get expatriates to move to such economies. In conclusion, commercial websites is relevant in explaining employee retention because results indicate that firms are aware that information on their job vacancies can be found on commercial websites. These, however, guarantee that they outsource their recruitment function to commercial websites.

The practical justification of this study would be useful to human resource practitioners by making them aware of current E-recruitment practices and the impact of its implementation to a firm's level of employee retention.

On the basis of the result of findings, the study recommends that human resource managers should have an understanding of the relationship between E-recruitment practices and employee retention to gain competitive advantage. E-recruitment is based on the fact that it is a practice that is increasingly being adopted by human resource managers with a long-term goal of achieving competitive advantage through its contribution to the retention of rare and valuable talent. The sample size for this research was determined using Marl Slovin formula.

The limitation of study: Using an alternative method for the sample size determination may offer a different sample size. It is important to note that this research engaged a very small sample population for enclosing the possibility of generalisation. Furthermore, this study relied on self-report measures, which can potentially lead to subjective bias amongst the respondents. It may have been difficult to provide the objective level as most firms are more concerned with employees who are retained and how to retain them rather than those who have already terminated their employment contracts.

Future Research: (i) The quantitative aspect of this research adopted a survey method of data collection; other studies could consider carrying out a study involving a longitudinal data collection process to provide a reliable confirmation of the relationships identified in this research. (ii) For this research, the quantitative research design was used. This design is such that numerical data were generated from a number of questionnaires administered to several respondents. Further studies could use in-depth interviews as qualitative data collection process to enrich the data collection process.

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SCIENDO
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T: +48 22 701 50 15