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EDITED BY
ADAM P. BALCERZAK
ILONA PIETRYKA

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Logistics potential calculation method for enterprise

JEL Classification: *D24; L87; R40; L91*

Keywords: *logistics potential, Logistics Performance Index (LPI), Integral index logistics potential of region, Enterprise logistics potential index (I_{ELP}).*

Abstract

Research background: Logistics potential occupies one of the leading positions among components defining economic situation in market relation conditions. Logistics potential estimation is one of the important sources for various hierarchical level logistics systems functional efficiency enhancement. This indication is being successfully used already on state and regional levels, but its importance is no lesser for separate enterprises.
Purpose of the article: The main purpose of the article is scientific substantiation and development of unified method for logistics potential index calculation for logistics area enterprises.
Methods: The basis of author's logistics potential estimation method for enterprises consists of theoretical research methods, that are: formalization (for developing logistics potential abstract mathematical model); analysis (separating logistics potential into constituents for the purpose of identification and measuring partial indicators / subindexes); synthesis (compilation of previously separated parts into the only whole for integral enterprise logistics potential index definition).
Findings & Value added: A method including enterprise logistics potential index measurement was developed. Index consists of indicators grouped into these five groups: technic-technological, economical, ecological, competency and quality. Given method can be applied to any enterprise of logistics area with partial revision or addition of indicators. Objectivity, measurability, clarity and uniqueness of

the indicators used are significant advantages of the method. Developed method of logistics potential measurement for enterprise gives an opportunity to assess the real situation of the investigated enterprise and aids enterprise to choose further strategic direction. Respectively, a company can be more effective in achieving expected market and economic outcomes. The method existence will be valuable both for the logistics company and for partners, investors or competitors.

Introduction

High level of competition within all the areas of economy of the world demands a lot of effort for keeping market position for enterprise, region or a state in whole. The use of logistics expands its boundaries each year, thus the undeniable fact is that logistic driven management is a key factor for resolving macro, mezzo and micro level economy issues.

Logistic performance index (LPI) is being used at macro level for discovering possibilities and problems considering logistic potential usage worldwide. International logistic effectiveness index provides qualitative assessment of the country, based on surveys for the world's largest logistics companies. Resulting LPI index is a complex indicator including six logistic effectiveness key indicators: state of infrastructure, efficiency of customs authorities, international transportation organization quality, competence and quality of logistics services, goods tracking, and adherence to delivery terms. This indicator is being used in 155 countries since 2007 and it is the main indicator for assessing the logistics potential of these countries.

Regions logistics potential is being considered at mezzo level. Evaluation methods for this type of potential exist and described by many scientists. Positive results were provided by ranging Polish Voivodeships by evaluated logistics potential coefficient (Wagner, 2016, 527 – 536 p.), logistics potential evaluation for some regions of Ukraine (Govorukha & Kuchkova, 2018, 79-89 p.), regions logistics potential analysis (Hrytsevych & Senkiv, 2017, 81–86 p.). These research projects are extremely valuable for regions development and contribute to regional management strategic goals achievement.

It is necessary to concentrate great attention on the potential of individual enterprises forming a logistics area of the country, i.e. at the micro level, for providing effective logistics potential usage indicators at macro and mezzo levels. Logistics potential usage leads to achieving market success for the enterprise (Matwiejczuk, 2011, 41-48 p.). Enterprise logistics potential essence and meaning researches are described in many publications of

modern scientists (Daugherty, Chen, Mattioda, Grawe, 2009, 1-18 p.; Jedlinski, 2009, 1-7 p.; Latuszynska & Strulak-Wojcikiewicz, 2013, 103-120 p.; Matwiejczuk, 2013, 265-275 p.).

Enterprise logistics potential should be evaluated for discovering possibilities and developing effective solutions and strategies for future development. Today there is no uniform methodology being universal for logistics area companies recognized. This is causes by non-adaptation of a great number of indicators in the conditions of the Ukrainian economy and, as a result, there is a complexity to fully reflect a real state of enterprises forming logistics area. Logistics development aims on providing progress in balanced achievement of economical, ecological and social goals (Delfmann et al., 2010, 57-63 p.). In this regard, necessity rises for in-depth enterprise's potential research and unified methodology development for evaluating enterprise's logistics potential as an important source for increasing logistics systems functioning effectiveness on different hierarchical levels.

Research methodology

Enterprise logistics potential evaluation idea can be successfully implemented in practice in case of developing appropriate methodical evaluation tools. Among the variety of valuation indicators, which are being used within many areas of scientific researches including logistics potential evaluation for country and region, the use of the index method is quite common. Its convincing advantages enabled authors to propose Enterprise logistics potential index (I_{ELP}) for evaluating logistics potential of an enterprise. Proposed methodical tools incorporate complexity, evaluation conciseness for indicators number, objectivity, clarity and unambiguousness of used indicators.

Expediency of indicators including within the I_{ELP} system was substantiated based on general characteristics of indicators qualitative analysis. Intrinsic features, which should be reflected in constituents of I_{ELP}, were determined. Each component has a self-sufficient value for individual aspects analyzing, but their common, resultant characteristic can be considered as an integrated indicator for Enterprise logistics potential evaluation.

Proposed indicators system of individual components, as the components themselves is open. Authors limited the methodology with statistic indicators only guided be a purpose to develop a methodology having accessible and practical usage. Considering the established aim of enterprise's logistics potential analysis and awareness of certain criteria importance for

logistics potential evaluation for enterprise, in case of providing appropriate logical justification, the expansion of I_{ELP} is possible.

Results

Authors proposed a methodical approach for enterprise logistics potential evaluation, which involves the implementation of these stages:

Stage 1. Influence indicators identification. Appropriate indicators, which has the biggest influence on logistics potential of the logistics area enterprise, should be selected. Developed methodology uses special type of indicators – statistical. In our opinion, these indicators are the most beneficial for logistics potential evaluation. Objective, real, clear and common indicators for logistics area companies were selected in the enterprises reporting data. These indicators include: revenue, goods (passengers) transportation rates, cargo (passenger) turnover, companies capital investment, expanses, tariff index, goods (passengers) transportation on average per day, average transportation distance for one ton of goods (one passenger), transportations intensity, warehouse capacity, total number of rolling stock, pollutants emission rates into atmospheric air, transport safety. Statistic indicators providing a possibility to evaluate logistics area enterprises activity are taken from the site of annual reporting for Smida market participants. It is the most beneficial to evaluate indicator change dynamics, so interested periods are defined (months, quarters, years – 2 and more). This stage is the most crucial in terms of evaluation procedure basis creation, because the main set of indicators should fulfill a number of requirements, including completeness, minimality and measurability as the basic ones.

Stage 2. Selected indicators grouping by defined components. This stage suggests selected indicators grouping by predefined logistics potential components. Considering logistics area companies specifics and specific data provided by statistics two groups of components can be highlighted within integrated I_{ELP} index structure:

I group of components with prioritized value includes techno-technological, economic and ecological components. Techno-technological component reflects capacity of transport and warehouse systems. Economic component defines effectiveness of enterprise logistics activity. Ecological component reflects management aspects of environment preservation and security.

II group of supporting components includes competence and quality. “Competence” component reflects possibility of providing their own specialists for various level and profile infrastructure objects, and a possibility

to research and analyze logistic systems and processes, elaborate programs for their development, what requires qualitative management personnel professional training in logistics specifically. In addition, this component defines a level of logistics professional competencies usage and a degree of their demand. "Quality" component reflects enterprise's policy considering logistics services quality level.

Information technologies and systems component is also considered important, but because of measurement complexity with the help of statistic indicators for this component, it is not taken into account. Considering industry specifics, selected indicators were grouped by components for the best logistics potential usage level reflection (Table 1). Since each component has a self-sufficient value for certain aspects of I_{ELP} analysis there is an essential characteristic provided for them.

Stage 3. Partial indices estimation for each indicator of enterprise logistics potential components. Third stage involves bringing all the indicators into a comparable form, because indicators forming and observed totality are heterogeneous and have different units of measurement, because they are describing various logistics potential characteristics. For partial indices from the studied population estimation, the best value indicator is selected and everyone else is compared with it. Partial indices are calculated using Excel tools for selected indicators. The following formula was used to calculate partial indices:

$$X_{ij}=\frac{Y_{ij}}{Y_{max}} \quad (1)$$

$$X_{ij}=\frac{Y_{min}}{Yij}, \quad (2)$$

where:
Y_{ij} – indicator value (i – indicator component, j – study period),
Y_{max}, Y_{min} – benchmark (the best indicator value within the studied population).

Note that formula (1) is being used in case maximum value is considered benchmark, formula (2) – minimum value.

Stage 4. Sub-indices evaluation for each logistics potential component. This stage includes sub-indices calculation for each potential component, which is being determined as arithmetic mean for components group:

$$K_{ij}=\frac{\sum X_{ij}}{n}, \quad (3)$$

where:
X_{ij} – partial indices of the component (i – indicators component between 1 and 5, j – study period),
n – component indicators number.

It should be noted, that calculating sub-index as indicator group average authors are considering mentioned indicators equally weighted. In some cases, it is recommended to calculate weight coefficients, helping to range indicators by importance. Such approach presupposes information on the qualitative side of the indicator preservation, but depends greatly on the expertise, making its practical usage complicated.

Stage 5. Integrated enterprise logistics potential index evaluation. He following formula is being used for logistics potential index evaluation:

$$I_{ELP}=\frac{\sqrt{(K1j)^2+(K2j)^2+(K3j)^2+(K4j)^2+(K5j)^2}}{5}, \quad (4)$$

where:
K_{1j} – K_{5j} – sub-index values calculated by logistics potential components (j – study period).

The results obtained are summarized in the table (Table 2).

Stage 6. Logistics potential prospective usage limits determination. This stage is important, because conclusions on logistics potential usage limits will be based on comparison of achieved results with evaluated limits. The following limits are defined through the expert analysis: logistics potential index between 0 and 0.4 values ($0 < I_{ELP} < 0.4$) indicates low, between 0.5 and 0.7 ($0.5 < I_{ELP} < 0.7$) – average and high ($I_{ELP} > 0.8$) logistics potential level. Calculated index is compared to defined limits and a conclusion is being made considering low, average or high level of logistics potential. Calculated indices (I_{ELP1} - I_{ELP6}) are compared in dynamics and included in determined limits to make a conclusion considering low ($0 < I_{ELP} < 0.4$), average ($0.5 < I_{ELP} < 0.7$) or high ($I_{ELP} > 0.8$) degree of logistics potential.

Conclusions

Logistics potential index evaluation methodology provides an opportunity to assess the real state of the enterprise and change dynamics for this indicator. There is a possibility to determine components demanding better management, investment or any other changes in the context of individual components. In addition, the advantage of this logistics potential evaluation

methodology is in relatively small money and time requirements (because all the components are statistically measured and easy to be found). For enterprise management the main advantage is well-calculated indicators, which could be used as a basis for future development strategies, for decision making on the activities differentiation, for services portfolio changes, for investment attraction requirements, for tariff increase / decrease possibilities, for rolling stock acquisition / delivery for outsourcings and for many other strategic decisions.

Enterprise logistics potential indexes evaluated using proposed methodology are important analytical and informational materials for logistics market research and analysis in whole or by separate segments. Strategic competitor groups can be formed, key factors for success in one or another logistics market segment can be determined by I_{ELP} level and its components. Competitiveness of the enterprise can be measured based on the integrated I_{ELP}, and I_{ELP} components can be used to assess competitive vulnerabilities. I_{ELP} can be used as a basis for logistics operators rating building, which unlike the existing ones characterized by only one indicator (revenue or cargo turnover) is more complex and creates integral multidimensional logistics market picture.

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Annex

Table 1. Indicators for logistics potential evaluation for logistics area enterprises

	Logistics potential component	Indicators	Unit of measurement	Component essential characteristic
Prioritized value	Technic-Technological (K_1)	Cargo (passengers) transportation on average per day	thousand tons (thousand passengers)	Defines the capacity of existing infrastructure objects, mainly for transportation and warehouse systems
		Average transportation distance for one ton of goods (one passenger)	kilometers	
		Transportation intensity	million ton-kilometer for 1 kilometer of road length	
		Warehouse capacity	units, m^2	
		Total number of rolling stock	units	
	Economical(K_2)	Revenue	billion UAH	Defines enterprise logistics activity performance
		Cargo (passengers) transportation	million tons (million passengers)	
		Cargo (passenger) turnover	billion ton-kilometers (billion passengers)	
		Enterprise capital investments	million UAH	
		Expanses	billion UAH	
		Tariff Index	% in relation to previous year	
	Ecological (K_3)	Pollutants emission rates into atmospheric air	thousand tons	Defines management aspects for environment preservation and safety
		Transport safety (transport events)	units	
Supporting effect	Competence (K_4)	Total number of employees involved	thousand persons	Defines possibility of providing their own specialists of various level and profile for infrastructure objects, and a possibility to research and analyze logistic systems and processes, elaborate programs for their development. In addition, this component defines a level of logistics professional competencies usage and a degree of their demand
		Employees number having higher education diploma for logistics speciality or certified according to international standards (e.g. ELA).	persons	
		Employees number having advanced training courses in logistics passed	persons	
	Quality (K_5)	On-time	%	Defines enterprise policy regarding the quality of logistics services
		In-full	%	
		Error-free	%	

*Prioritized value components group is obligatory for calculation and statistically measured. Supporting effect indicators are taken from enterprise internal reporting.
Source: author's own elaboration.

Table 2. Enterprise logistics potential index summary calculation table

Indicators	Period					
	1	**2**	**3**	**4**	**5**	**6**
Technic-technological component:						
Cargo (passengers) transportation on average per day	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}
Average transportation distance for one ton of goods (one passenger)	X_{21}	X_{22}	X_{23}	X_{24}	X_{25}	X_{26}
Transportation intensity	X_{31}	X_{32}	X_{33}	X_{34}	X_{35}	X_{36}
Warehouse capacity	X_{41}	X_{42}	X_{43}	X_{44}	X_{45}	X_{46}
Total number of rolling stock	X_{51}	X_{52}	X_{53}	X_{54}	X_{55}	X_{56}
Technic-technological component sub-index	K_{11}	K_{12}	K_{13}	K_{14}	K_{15}	K_{16}
Other components and sub-indexes are similar						
Enterprise logistics potential index	I_{ELP1}	I_{ELP2}	I_{ELP3}	I_{ELP4}	I_{ELP5}	I_{ELP6}

Source: author's own elaboration.

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How the following three factors influence reputational stability and anti-crisis sustainability: innovative approach, media activity and corporate social responsibility

JEL Classification: *M14; M31; L21; D22*

Keywords: *reputation management system; corporate reputation; reputation ranking; reputational stability; corporate social responsibility; Ukraine*

Abstract

Research background: The juxtaposition of war and peace can help to understand the differences in managing a company's reputation to maintain its stability and to overcome a reputation crisis. Consistent and time-tested procedures (such as CSR) underpin system stability, while anti-crisis measures require new innovative solutions from reputation management, but it should be verified in practice.
Purpose of the article: This research is aimed at studying how the following three factors influence reputational stability and anti-crisis sustainability: innovative approach, media activity and corporate social responsibility.
Methods: The indicators of innovative approach, media activity, corporate social responsibility, reputational stability and anti-crisis sustainability were collected through an online survey. A sample of 315 companies was formed by selecting (according to content analysis) the largest companies most frequently mentioned in the media, each of which was assessed by at least five industry experts. Structural Equation Modeling (SEM) along with the maximum likelihood estimation method were used to study the relationships between the above indicators according to the purpose of the research.
Findings & Value added: The research results reveal: 1) a significant correlation between CSR and reputational stability; 2) innovative approach and media activity are the most significant variables that ensure anti-crisis sustainability; 3) CSR is less important in terms of ensuring anti-crisis sustainability than for maintaining reputational stability; 4) anti-crisis sustainability is much more dependent on media

activity than reputational stability; 5) reputational stability positively depends on anti-crisis sustainability. Thanks to a better understanding of innovative approach, media activity and corporate social responsibility, company management can use the research results to enhance the efficiency of reputation management and differentiate approaches in crisis and stability.

Introduction

The difference between war and peace can help to understand the differences in managing a company's reputation in terms of its stability compared to a reputation crisis. The system still deploys the same resources, i.e. time, people, money and material factors. It appears that the question concerns a different approach to the use of factors: some of them serve to maintain peace and prevent war, while others are aimed at winning and restoring the system balance.

The above analogy of war and peace can help to understand the differences in managing a company's reputation in terms of its stability compared to a reputation crisis. Consistent and time-tested procedures underpin system stability. Nevertheless, anti-crisis measures require new innovative solutions from reputation management. Interaction with company's stakeholders is absolutely necessary to overcome the crisis: the rate of spreading dangerous rumors and scandals in the media is much higher than the rate of spreading positive information. It can be assumed that specific critical reputation management practices, such as CSR, will remain unchanged in the event of crises and balance the system.

This research is mainly aimed at testing hypotheses about how the following three factors influence reputational stability and anti-crisis sustainability: innovative approach, media activity and corporate social responsibility (CSR).

The analysis is based on data collected during a survey among experts within the context of the National Ukrainian Rating of Corporate Reputation Management "Reputation ACTIVists". This survey was conducted in February and March 2019. 110 industry experts assessed company reputation management. To obtain relevant expert opinions, experts were asked to fill out an online questionnaire (Table 1 and also available at http://repactiv.com.ua/ru after authorization of experts). Structural equation modeling was performed based on information received from 315 companies.

Summarizing the above, we suggested that anti-crisis sustainability is more dependent on innovative approach and media activity, and CSR is

equally important for maintaining reputational stability and overcoming reputation crises according to literary analysis. The next section explains the data collection procedures and methodology used to analyze data, as well as discusses and summarizes the results.

Research methodology

In order to study how innovative approach, media activity and corporate social responsibility influence reputational stability and anti-crisis sustainability, we collected data during an online survey among experts within the framework of the National Ukrainian Rating of Corporate Reputation Management "Reputation ACTIVists," the methodology of which was developed by Olena Derevianko, the author of this article.

The rating algorithm is an expert questionnaire. Rating criteria are based on a reputation management model (developed by the author and published earlier (Derevianko, 2014). Each criterion is decomposed as a set of rating indicators and functions on a scale from 0 to 10 (1 is the distance between points). All indicators have the same significance. The questionnaire consisted of five parts, including Innovative Approach, Media Activity, CSR, Anti-Crisis Sustainability and Reputational Stability.

Using the questionnaire (see Table 1), which was posted on the Internet, we examined the reputation management practice at companies. Moreover, the total score of each company for each assessment criterion was calculated as the sum of five indicators representing three dimensions of the reputation management system (see Table 1).

Experts were only external to nominal companies: national competent media experts; independent industry experts; representatives of consulting companies; investment analysts; representatives of industry and professional public organizations that unite participants of relevant markets. The list of experts is available to the public at http://repactiv.com.ua/en/experts.

The sample of companies is representative, which is confirmed by three sampling stages: 1) sampling of the companies most frequently mentioned in the media based on content analysis; 2) sampling from the previous sample of large companies based on the net profit criteria; 3) sampling of only those companies that were assessed by at least five experts (from the previous sample).

This three-stage sampling procedure enabled us to focus on the subsequent econometric analysis of companies that are critical to the economy of Ukraine and are widely known and mentioned in the media, as well as have a fairly transparent and understandable reputation and management system.

At the next stage, our researches and hypotheses were interpreted as a structural model (Fig. 1) using the IBM statistical analysis software (SPSS) 25.0 and the Analysis of Moment Structure (AMOS) 18.0 software by IBM.

Structural Equation Modeling (SEM) is a methodology designed to test a large number of parallel hypotheses about cause-effect relationships, which is especially efficient for correlated data (Riggs & Lalonde, 2017). SEM is a method that was originally developed for use in the social sciences, in particular for processing research data obtained from questionnaires (Spearman, 1904). Subsequently, Sewall Wright, the developer of SEM used by us, (Pearl & Mackenzie, 2018) showed how simple path analysis diagrams can be used to graphically represent how one variable defines another. Using the maximum likelihood method in SEM allows us to efficiently use the available information to fill in the gaps in the values of variables when building correlation models (Gold et al., 2003). Therefore, the SEM method, path analysis model and maximum likelihood method, in particular, are best suited for the purposes of our research, which include the analysis of complex cause-effect relationships of five variables: Innovative Approach, Media Activity, CSR, Anti-Crisis Stability and Reputational Stability.

Reliability was analyzed according to the internal consistency (see Tables 2 and 3 for Cronbach's alpha values). Design reliability was confirmed by confirmatory factor analysis: it was confirmed that the obtained values were significant. Since the chi-square estimation of model fit is sensitive to the large sample size (Schumacker & Lomax, 2015), we implemented other highly recommended model selection measures (Byrne, 2013), such as the chi-square mean to degree of freedom (CMIN/DF), comparative fit index (CFI), normed fit index (NFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA) for model assessment. In order to show the model fit, CMIN/DF should be less than 2.00, CFI and TLI should be more than 0.90, while RMSEA should be less than 0.08 (Byrne, 2013).

Using the above criteria allows us to prove that the resulting model has sufficient internal consistency, reliability and signs of model fit, which makes it possible to use it in practice in order to explain the influence of innovative approach, media activity and corporate social responsibility on reputational stability and anti-crisis sustainability.

From this perspective, the following hypotheses are intended to assess how innovative approach, media activity and CSR influence reputational stability and anti-crisis sustainability:

To achieve the purposes of the research, the following hypotheses are proposed:

H1: *Anti-crisis sustainability requires a higher level of innovative approach than is necessary to maintain reputational stability*.

H2: *Anti-crisis sustainability requires a higher level of media activity than is necessary to ensure reputational stability*.

H3: *Corporate social responsibility is equally positively associated with reputational stability and anti-crisis sustainability*.

H4: *Anti-crisis sustainability positively influences reputational stability*.

Results

The analysis data on how the above factors influence anti-crisis sustainability proved that innovative approach and media activity are the most significant variables. The analysis data on how media activity and CSR influence reputational stability proved that CSR is the most significant variable.

Converged validation results are acceptable. According to Taber (2017), alpha values were described as excellent (0.93–0.94), strong (0.91–0.93), reliable (0.84–0.90): all Cronbach's alpha values are reliable in the model (Tables 3 and 4).

Descriptive statistics of the 5 analyzed variables are presented in Table 3. On average, reputational stability was higher than anti-crisis sustainability. We also see that innovation activity is the most volatile variable (see Standard Deviation, Table 3), and CSR, by contrast, is the least volatile variable among sampled companies.

The initial data sampling from 315 companies required normalization to apply the most reliable modeling method, i.e. maximum likelihood method. Final sample size = 301 (Table 4). c.r. = 3.802 that is significantly less than 5 and indicates the normality of data distribution. Previously, 14 companies (which are not industry leaders but rather little known and therefore received strange expert evaluations) or 4.4% of the initial sample were excluded from the analyzed sample, which increased the normality of data distribution. Therefore, the assumption of the multidimensional normality of variables is not violated: the chosen evaluation method is correct. The asymmetry and kurtosis values for each variable are also insignificant (Ta-

ble 4). All this indicates the normality of sample distribution and suitability of data for subsequent analysis.

Given that the CFI exceeds 0.95, CMIN/DF is <2, RMSEA amounts to <0.05, and even though the statistical significance of chi-square (p value) does not meet the criterion <0.05, the model can be considered confirmed empirically. The large sample size (N/T>10) also proves that the model is reliable.

Regression weights and their statistical significance are shown in Table 5. All model parameters are statistically significant, as evidenced by the estimated regression weights proving that the model is sequential.

The resulting model is reliable: the model as a whole explains 92% of the reputational stability variance and 95% of the anti-crisis sustainability variance (Fig. 3).

Below are explanations of hypothesis testing results:

During the analysis, it became necessary to correct the initial H1 hypothesis. "Innovative Approach that Influences Reputational Stability" as statistically unreliable was excluded from the model (see Table 3). This necessitated to adjust the hypothesis model in AMOS (compare Figs. 1 and 2) and did not allow us to compare the influence of the innovative factor in two cases: reputational stability and anti-crisis sustainability. However, the resulting model indicates that innovative approach is an important factor to anti-crisis sustainability (0.42 regression weight, see Fig. 3).

Hypothesis H2: It is confirmed that a higher level of media activity is required to ensure anti-crisis sustainability than is necessary to ensure reputational stability. Media activity is much more important to overcoming the crisis and ensuring anti-crisis sustainability than for maintaining reputational stability: the ratio is more than doubled in the first case (Fig. 3).

Hypothesis H3: It is disproved that corporate social responsibility is equally strongly positively correlated with reputational stability and anti-crisis sustainability. The anti-crisis reputation management system does not require CSR, but reputational stability at the level of 0.55 is ensured by corporate social responsibility (Fig. 3).

Hypothesis H4: It is confirmed that reputational stability positively depends on anti-crisis sustainability. According to the analysis data, anti-crisis sustainability at the level of 0.25 ensures reputational stability (see. Fig. 3).

Conclusions

The research results reveal: 1) a significant correlation between CSR and reputational stability; 2) innovative approach and media activity are the

most significant variables that ensure anti-crisis sustainability; 3) CSR is less important in terms of ensuring anti-crisis sustainability than for maintaining reputational stability; 4) anti-crisis sustainability is much more dependent on media activity than reputational stability; 5) reputational stability positively depends on anti-crisis sustainability.

Based on empirical data and structural modeling methods, we obtained the following results that allow us to recommend the use of CSR to maintain reputational stability, but management should give preference to innovations and expand media activity when in crisis.

The research used a limited sample of large companies (315 companies in total), which limits the consolidation of results for other market participants, e.g. small and medium business.

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Annex

Table 1. National Ukrainian Rating of Corporate Reputation Management "Reputation ACTIVists": Questionnaire (Expert Evaluations on a Scale of 0 to 10 Points)

Innovative Approach	**Media Activity**	**CSR Image Capital**	**Anti-Crisis Sustainability**	**Reputational Stability**
Assess the level of PR service's creativity (or its separate experts)	Assess the PR-service's readiness to communicate (personally – assessed by media experts), in the form of messages regularly addressed at stakeholders (by non-media experts)	Does the company provide the public with enough information on the projects of corporate social responsibility (CSR) that are being realized?	Do you think (basing on information in the media space or any other information you have access to) that the company has an integral and quickly tailored to a particular situation STRATEGY of reacting to reputation crises? If your answer is yes, assess this strategy on a scale of 0 to 10 points	Is there a "real" PR-service in the company? (assessed by presence of a professional PR-tram)
How many interesting and innovative PR- or marketing projects of the company have you heard of?	Assess information value of press releases, official information in social networks	Are the projects that the company claims to be CSR projects useful for the society and/or target groups of stakeholders?	Do you think that the company has anti-crisis PR TOOLS? If your answer is yes, assess this skill on a scale of 0 to 10 points. (If you did not have an opportunity to make sure of that, leave the slot empty)	Does the company regularly perform PR activities that are clear to experts?
Is the presence in social Internet networks and other digital-variants of communication visible?	Assess the efficiency at neutralizing the media's negative information about it. If an expert does not know about any facts of any risk arising, a point is not given (an empty slot of the table).	Does the company treat its employees, consumers and business partners with social responsibility?	Can you say about the company that it QUICKLY recovered its reputation losses? If your answer is yes, assess the efficiency of anti-crisis activities on a scale of 0 to 10 points.	Is there an objective basis for reputational stability (product quality, unique product offer, innovative technologies, etc.)?
Can you say that target audiences who the company's PR innovations you know about are aimed at reacting to them in a positive way?	Assess visibility and image of the company's speakers	Are CSR projects implemented by the company perceived by its target audiences positively?	Do you think that CRISIS has ENHANCED the company's REPUTATION? If your answer is yes, assess it on a scale of 0 to 10 points	Is there a constant strong support from the company?*
An expert's subjective opinion: do PR innovations applied by the company have any positive effect?	An expert's subjective opinion: do the efforts made by the company in the media field have any positive effect?	An expert's subjective opinion: do you think CSR projects implemented by the company guarantee reputation capital growth?	Do you think that the company experienced a positive FINANCIAL EFFECT due to application of anti-crisis PR tools? If your answer is yes, assess it on a scale of 0 to 10 points. (If you did not have an opportunity to make sure of that, leave the slot empty)	An expert's subjective opinion: do the company's efforts to manage reputation have any positive effect?

* "A constant strong support" means a generally positive perception of a company by its target audiences, it is not subject to serious fluctuations during a long period of time

Source: Developed by author

Table 2. Reliability Statistics: Cronbach's Alpha

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Evaluation	.984	.984	5

Table 3. Descriptive Statistics on Online Survey Results

Variable	Number of Companies	Minimum	Maximum	Mean	Std. Deviation	Cronbach's Alpha if Item Deleted
RStability	315	3.0000	50.0000	35.194940	8.6009650	.981
CSR	315	4.0000	50.0000	33.543515	8.5473079	.981
Media	315	8.0000	50.0000	34.160029	8.6783844	.979
Innov	315	7.5000	50.0000	32.472437	9.0839716	.978
RCrisis	315	7.5000	50.0000	32.773557	8.7347596	.980
Valid N (listwise)	315					

Table 4. Assessment of normality after normalization of the data sample*

Variable	min	max	skew	c.r.	kurtosis	c.r.
CSR	9.000	50.000	-.487	-3.448	.008	.028
Innov	7.500	50.000	-.406	-2.877	-.155	-.550
Media	8.000	50.000	-.611	-4.331	.001	.004
RCrisis	7.500	50.000	-.483	-3.421	-.156	-.551
RStability	7.500	50.000	-.702	-4.970	.322	1.140
Multivariate					3.667	**3.802**

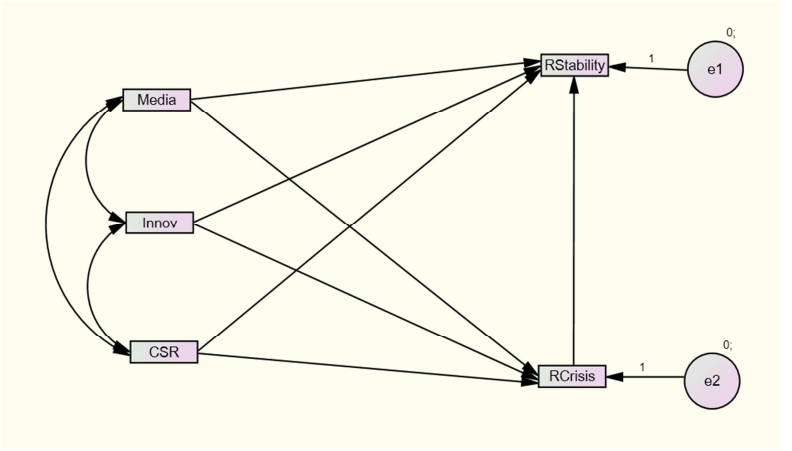
*Sample size = 301. c.r. = 3.802 that is significantly less than 5 and indicates the normality of data distribution. Previously, 14 companies (which are not industry leaders but rather little known and therefore received strange expert evaluations) or 4.4% of the initial sample were excluded from the analyzed sample, which increased the normality of data distribution.

Table 5. Regression Weights (Default model): After Model Corrections

Parameters			Estimate	S.E.	C.R.	P	Label
RCrisis	<---	Innov	.406	.049	8.349	***	par_4
RCrisis	<---	Media	.415	.046	9.072	***	par_5
RCrisis	<---	CSR	.148	.045	3.270	.001	par_7
RStability	<---	CSR	.543	.051	10.640	***	par_6
RStability	<---	Media	.178	.060	2.968	.003	par_8
RStability	<---	RCrisis	.241	.062	3.861	***	par_9

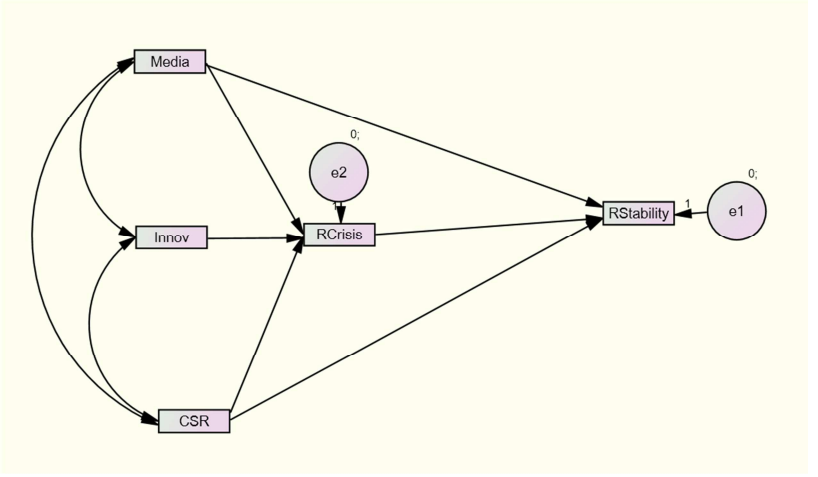
*Chi-square = ,390. Degrees of Freedom = 1. Probability Level = ,532
The model is recursive. All parameters are statistically reliable – more or about ,001.

Figure 1. Research Hypotheses Formulated in AMOS Structural (Path) Model Format



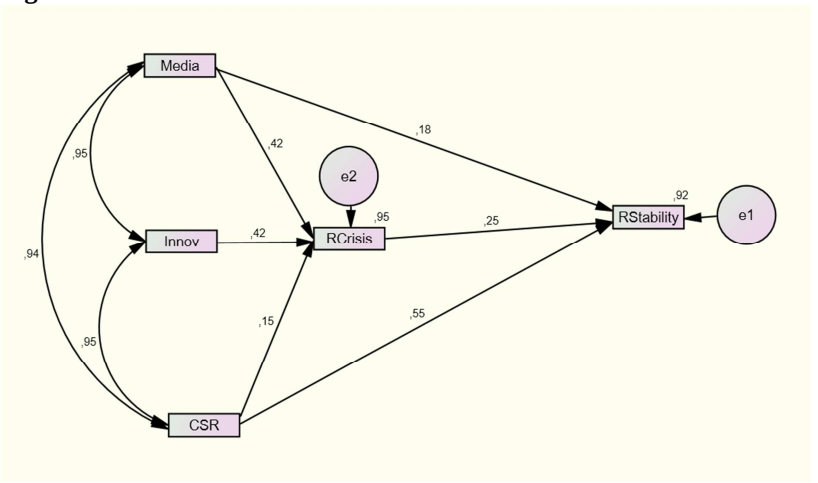
Source: Proprietary (Based on IBM SPSS Statistics 25.0 with AMOS 18.0).

Figure 2. Research Hypotheses After Model Corrections in Updated AMOS Structural (Path) Model Format*



Previous Model Corrections: Sample Normalization and Excluding of "RStability<---Innov"
Source: Proprietary (Based on IBM SPSS Statistics 25.0 with AMOS 18.0).

Figure 3. Standardized Model



Source: Proprietary (Based on IBM SPSS Statistics 25.0 with AMOS 18.0).

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Volunteering and sustainable growth of social enterprises. Lessons from scouting organizations

JEL Classification: *L31; L33; J24*

Keywords: *relationship management, scouting, social enterprise; sustainability, voluntary*

Abstract

Research background: Sustainable development of social enterprises (SEs) depends essentially on mobilising human capital, including volunteer work.
Purpose of the article: To determine success factors of SEs dependent on volunteer work. As SEs are at a nascent stage of development, the article analyses the conditions shaping volunteering in organisation of Polish Scouting and Guiding Association (ZHP). ZHP was selected as the subject of research due to the maturity and durability of this organization and its similarity to SEs (non-profit orientation, volunteer work).
Methods: Within the framework of the study a survey covering 29 regiments from Wielkopolska ZHP (70% of field offices) was collected. Based on these results recommendations for SEs focused on sustainable development with the use of volunteering had been formulated.
Findings & Value added: Within the framework of human capital of non-profit organizations (NPOs) it is essential to improve the motivation, involvement and retention of volunteers. The empowerment of volunteers and the possibility to

pursue individual interests and passions within a clearly communicated mission and vision of the organization are most important success factors for all types of NPOs.

Introduction

The hybrid nature of social enterprises (SEs) combines commercial and social activities. This duality raises a lot of controversy related to mission drift. When organizations seek different and contradictory goals or try to meet the inconsistent requirements of many stakeholders there might arise some tensions.

Volunteers are an important stakeholder group for SEs as well as for the non-profit sector in general. While paid employees can be driven by the market, motivations of volunteers are the driving force behind social activities contributing to sustainable development of SEs and non-profit organizations (NPOs). Research on volunteers and volunteerism usually focuses on antecedents to volunteering as well as on outcomes for volunteers (Rogelberg et al., 2010). But the volunteer nature of work also challenges the traditional ways of team management based on contractual labor/pay exchange (Walk et al., 2018). In nonprofit- or social work settings where formal power execution is not often, the relations in the team are more delicate.

Meanwhile, short-term or episodic volunteering associated with volunteer dissatisfaction and lack of engagement put a constant pressure on NPOs and SEs. Volunteer replacement costs time and money, since new volunteers require organizational onboarding to perform their tasks well. Therefore, in our research we address the questions: what are the most important volunteer team management practices helping to retain volunteers and how does the volunteer retention affect the organization's performance.

We begin this article with a brief look on the similarities between the SEs and NPOs in terms of volunteer work dependence and we articulate why it can be beneficial for SEs to use the lessons learned by established NPOs, like ZHP (Polish Scouting and Guiding Association). Next, we propose a brief literature review on volunteerism and the methodology section, where we describe our empirical research procedure. Finally, the empirical results are presented and discussed.

Literature review

SEs are oriented towards activities that are socially useful. This applies to both projects related to the supply of public and communal goods and services, as well as activities for the integration and activation of socially excluded people, reduction of poverty, inequality, homelessness and unemployment.

The complexity of SEs expressing a different identity, goals, logic and practice of operation creates particular difficulties for the leaders of these organizations. They arise from the tensions created when organizations seek different and contradictory goals or try to meet inconsistent requirements of many stakeholders what results in a mission drift (Smith & Lewis 2011). Therefore SEs are a classic example of hybrid organizations (Wilson & Post, 2013).

Tensions occurring when organizations attempt to keep a balance between pursuing commercial and social objectives can be interpreted on the basis of financial and human resources necessary for the sustainable development of SEs. Despite the fact that the economic situation of SEs is better than NPOs that do not conduct economic activity, they are entities with limited financial and human resources. They also have little possibility of employing qualified employees. Therefore, SEs often use non-paid incentives to motivate their staff and at least partly rely on volunteer work.

Volunteering can be defined as a gift of time and labor freely donated to an organization that has the aim of benefiting people or achieving other widely recognizable goals (Cnaan et al., 1996, pp.364-365). In consequence, volunteers usually do not have any contractual obligation to the organization and do not get any pay (Walk et al., 2018).

Literature explains volunteer motivation as often associated with altruism and pro social attitude, but intrinsic motivation is represented by a group of factors derived also from the nature of organization, its management and culture. This goes in line with the Person-Environment mode. This model consists of work, mission and strategy compliance, and compliance with a group of colleagues and superiors. Compliance is here recognised as a main factor of volunteer motivation to support organization. It implicates that work and environment compliance can be achieved by getting volunteers, with a high prosocial attitude and by further developing them in the organization. Compliance is achieved when volunteer and organization share similar goals and values. Moreover, often creative approach to task that enables development a sense of usefulness, possibility of self-fulfilment and friendly professional relationship. Therefore, the volun-

teer engagement has to be interpreted not only as work, but also as a form of leisure (Brown, Zahrly, 1989).

A separate issue linked to volunteer satisfaction is how to retain volunteers. Although scant, the existing publications dealing with these issues indicate that the volunteer turnover and engagement are indeed influenced by non-wage motivators as praise, commendation, advancement, appropriate technical working conditions. Moreover, they are a function of personal identification with the organization and trusty relationships with their leaders and in within the team (Tidwel, 2005). These relationships and the sense of personal identification can be developed thanks to communication that contributes to integrity of organization's goals and activities, mutual feedback, inclusion, recognition.

Volunteers have to be confident their organization could carry out its mission and need to understand, both on cognitive and emotional level, that their work is contributing to the mission and goals of the organization. The sense of mission can be increased when managers make consistent references to the purpose the organization serves and its accomplishments, while working to improve personal relationships. (Tidwel, 2005). This requires an individual approach, listening and feedback skills, ongoing interactions, as well as written policies and job descriptions (Bang, 2011).

A series of positive events and interactions adds to an inclusive organizational culture, which relies on respect and equal contributions of all employees, management and volunteers. The sense of inclusion is a process, where an individual achieves a 'positive social identity' by assimilating the 'collective enhancing' as 'self-enhancing' (Tidwell, 2005, p.451). Therefore, not only direct relations between the leader and the volunteer are important, but also the climate among the members of the team (Walk et al., 2018).

The inclusiveness is also intertwined with the volunteer recognition. Rewarding volunteers for their merits and time is not necessarily achieved through tangible personal benefits, because it contradicts the very sense of volunteerism. However, acknowledgements, symbolic awards and badges and a simple "thank you" can all foster positive relationships between volunteers and the organization (Walk et al., 2018).

Clearly, the NPOs and SEs need to provide sufficient resources for their volunteers like information, funds and training. But to feel their work as purposeful and important, leaders must also create effective communication channels and a supportive social network. In the contemporary body of research on volunteering trust, commitment, inclusion, recognition and volunteer satisfaction are proposed as antecedents for volunteer retention and overall organization performance. However, the empirical evidence

linking the degree of organization's success in delivering services to its beneficiaries and volunteer retention as well as linking volunteer retention with concrete managerial activities is missing.

Research methodology

To ground our empirical research in an established theory and to look for useful inspirations in preparing the research questionnaire, we looked for a motivation model, which covers the intrinsic motivation of volunteers. Such an approach has been presented by J.R. Hackman and G.R. Oldham in H-O model. Concept combines elements of content and process theories of motivation and endorse four components of motivation factors: job motivation potential, context-sensitive satisfaction, qualifications, an individual desire to development (Hackman & Oldham, 1976, pp. 250-279).

Our sample consists of instructors who command 28 out of 40 regiments (sub-regional scouts' teams) in Wielkopolska and Lubuskie region. Thanks to the courtesy of the regional commandant, these respondents were asked during a regional conference to fill-in a printed questionnaire concerning the last 3 years of their work. The questionnaire comprises of 269 items grouped in 33 sections dealing several topics including the volunteering work, the permanent team management, the external stakeholders management and the financial management including the EU fund raising.

For the reasons of brevity and in order to achieve the aim of this article in a most effective way, we concentrate only on the results, which deal new volunteers' attraction, volunteers' retention, motivation for taking the volunteering work, volunteers' engagement, volunteers' reason for leaving and overall volunteer team management. The respondents were asked to rate to what extend the description in every question matches the situation in their respective sub-regional teams. We implied a 0-10 scale, where '10'/'1' meant "the description is totally adequate/inadequate to the situation in my team", while '0' could be used if the respondent was not sure what to answer.

We assumed that the 9-10 answers are significantly less likely to be biased as they clearly present the positive 'extreme' (associated with easily understandable 90% - 100% rates), while 7-8 ranks still offer much comfort for the respondents wanting to view themselves in a positive way, even if they know their reality is not perfect. Consequently, only scouting teams with at least one performance metric reported as equal to 9 or higher were qualified for detailed examination (see Table 1, section B). In turn, our analysis of the volunteering work in these high performing companies con-

centrates on the most essential issues, which were also rated as equal to 9 or higher (see Table 1, section A).

Results and discussion

Table 1 presents the digest of the questions dealing with the volunteer team management that were in average rated 9 or higher by sub-team scouting instructors. They deal with volunteer retention, motivation for taking the volunteer work and with the overall volunteer team management.

What these results reveal can be categorized into 3 types of inferences. First, high motivation of volunteers in four analysed groups is represented first and foremost by self-actualisation of interests and passions. Moreover, internal potential was slightly above rated than the context satisfaction. View of the motivation factors enables separate evaluation and comparison of 4 groups.

The effectiveness in inducing high motivation was assessed by comparing the ratings of motivation factors with the assessment of increase in number of volunteers. For Groups 1, 3 and 4 there is a kind of rule. In these organizations, the higher the rating of intrinsic motivation the higher evaluation of volunteers' growth, taking into account that it also depends on the individual volunteer predisposition. A comparison for each of group shows a certain regularity, that means that volunteering develops in these organizations where manager activity creates conditions to ensure a strong internal motivation of volunteers.

Second, the distinguishing managerial activities, which characterize the leaders of high-performing organizations in terms of volunteer management are based on a few relatively unsophisticated, yet important rules. In accordance with the analysed literature we found the empirical evidence that the true leadership is about creating the working environment:

- purposeful (by constantly fostering the goals and the identity of their organization),
- friendly (by taking care of relationships among team members),
- interesting (by fighting the dullness of simple task fulfilment),
- challenging (by empowering people).

Third, it looks that although the ultimate goal of a NPO is to provide help for the society i.a. by offering assistance to its direct beneficiaries, its social impact on volunteers has to be equally positive. According to a recent American Red Cross study, also in high performing organizations (here i.a. in terms of helping the victims of natural catastrophes) the volunteer experiences can be poor (e.g. in terms of procedures that get in the way

of helping) and cause especially long-term volunteers to quit (Smith & Grove, 2017). Our findings also show that high level of current beneficiaries' satisfaction alone, does not allow to expect that the organization is flourishing (see Group 3). Moreover, it seems the volunteer satisfaction is more important than the beneficiaries' satisfaction (compare Group 2 and Group 3) in that sense that it precedes the latter one to much higher extend than the other way. Ultimately, a sustainable growth of an organization is only possible when the needs of the stakeholder groups are balanced and when the management takes up an authentic leadership role. It allows to avoid tensions between pursuing their social missions and meeting the demands of a market economy which are experienced by NPOs, especially acting as SEs.

Conclusions

The essence of functioning of SEs is the effective accomplishment of business and social activities in the implementation of their mission related work. The increase in the number of beneficiaries is a tangible social impact of the SEs. In turn, the influence of SEs on solving urgent social problems would not be possible without the participation of properly motivated and satisfied, long-term volunteers. While paid staff is commonly market driven, volunteer motivations are social mission driven. Therefore, it is an essential task in the competence of SEs' leaders to avoid tensions between SEs stakeholders.

Our research refers to the body of knowledge on volunteer work where it is still in a nascent state. We have operationalized the leadership skills that were previously anticipated in the literature in the form of only several, empirically tested tasks, which a true volunteer-oriented leader has to absolve. Such 'zoom-in' approach enables the leaders of SEs and NPOs to concentrate on the most essential practices and improve the performance of their organization. Further on, the coincidence between mastering these key tasks and volunteer retention and the success of the organization in terms of beneficiaries' satisfaction and outreach emphasis the need to balance the internal and external priorities of the organization.

The limitation of this research is its relatively small scale and focus on scouting organisation only. Further research should include more types of NPOs to prove a wider applicability of proposed findings. Another limitation is the fact that due to scarce number of successfully operating long-lived SEs, the research assumes similarities between the SEs and NPOs in volunteer team management. Although this assumption is not grounded in

the literature, it should be also tested with application of a longitudinal case study.

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Annex

Table 2. Volunteer team management characteristics and organizations' success.

	A						B		
	Clear mission communication	Clear vision communication	Involvement in decision-making	Taking care for team sprit	Self-actualization through shared passions & interests	Tasks/roles diversity	Level of beneficiaries satisfaction	Growth in number of beneficiaries	Growth in number of volunteers
Group 1	9,5	9,3	9,5	9,0	9,0	9,0	9,4	9,8	9,5
Group 2	9,0	8,7	8,9	8,4	8,4	8,3	8,6	7,9	9,4
Group 3	8,2	8,2	7,2	7,8	9,2	8,4	9,3	5,0	5,8
Group 4	6,9	7,1	7,3	7,7	7,8	6,4	6,5	4,1	4,8

Sections and questions:
A The characteristics of volunteer work in scouting teams aimed at volunteer retention, motivation and overall team management.
B: Performance metrics.
Groups' descriptions:
Group 1: Teams where level of beneficiaries' satisfaction and growth in number of both beneficiaries and volunteers are exceptionally high.
Group 2: Teams where growth in number of volunteers is exceptionally high and both beneficiaries' satisfaction and growth is high.
Group 3: Teams where beneficiaries' satisfaction is exceptionally high but growth in number of beneficiaries and volunteers is medicore.
Group 4: All other teams excluding groups 1-3.

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Business model innovation and company's development – literature review

JEL Classification: *L21; M10; O30*

Keywords: *business model innovation, co-occurrence analysis, literature review*

Abstract

Research background: Traditional forms of innovation (such as product, process etc.) seem to be obsolete. That is why companies are trying to develop new ways of obtaining competitive advantage. Helpful in this matter are business model innovation.
Purpose of the article: Purpose of performed study is to assess the role of business model innovation in the process of company's development.
Methods: For the purpose of the study an extensive literature analysis was performed.
Findings & Value added: Results of performed analysis is an up-to-date map of relationships existing between different research themes referring to business model innovation and company's development.

Introduction

Although lately business model innovation caught the attention of researchers as well as representatives of business practise its impact on the company remains vague. In light of the identified research gap the aim of this paper was to identify the role of business model innovation for company's development. In order to achieve the aim of the paper an extensive literature review was performed.

Literature review

Many authors considers the phenomenon of business model innovation as still unexplored. According to Schneider & Spieth (2013) the concept remains vague and practitioners seek guidance in this matter. Guo et al. (2013) believes that scholars need to take greater efforts to advance research in this area. Breuer & Lüdeke-Freund (2014) also mention that the problem-solving potential of business model innovation is still unexplored. Additionally, Saur-Amaral et al. (2016) points out that no cumulative effects of gathering knowledge among existing publications on business model innovation can be seen.

Taking this fact into consideration a substantial research gap existing in the literature on the role of business model innovation for company's development was identified.

Research methodology

In order to achieve the aim of the paper, which was to identify the role of business model innovation for company's development, a thoroughful literature review has been conducted. Such a type of analysis is useful in case of researching complex scientific phenomenon which have recently emerged and there is no agreement among the researchers on the nature of the problem. Business model innovation represents such a phenomenon, while it is a relatively new and yet undiscovered issue, encompassing variety of company's fields of activity (Dymitrowski, 2016).

Results

Results of performed analysis are presented in Figure 1. It shows a map of relationships occurring between different keywords referring to the topic of business model innovation and development. The map illustrates not only the up-to-date status of knowledge in the researched area, but also identifies the key research themes. Taking into account their number and diverse character one could acknowledge the complex nature of business model innovation and its important role in company's development.

Conclusions

Results presented in the paper possess a specific value – they offer a comprehensive and complete map of research themes associated with business model innovation and development. Therefore in a complex way they describe the role of business model innovation from the perspective of company's development. Additionally, achieved results present up-to-date state of knowledge on the studied phenomenon.

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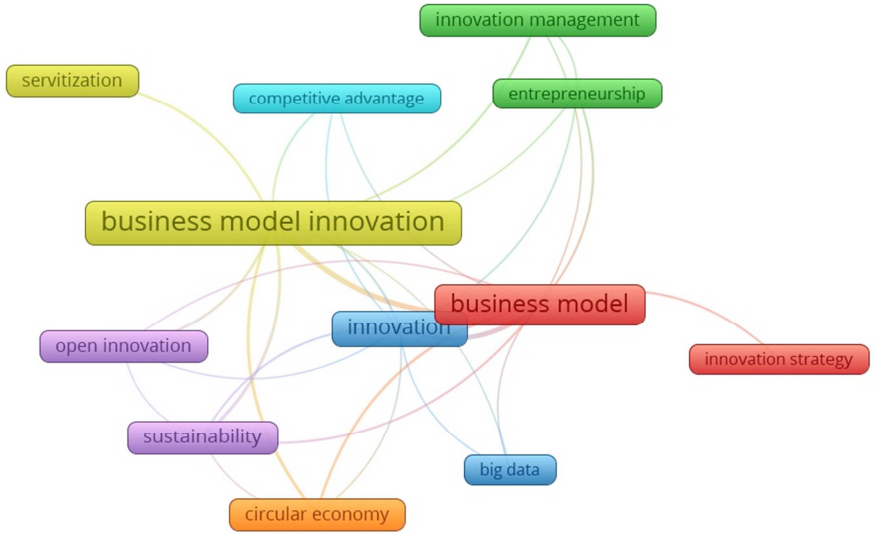
Annex

Figure 1. Map of keywords referring to the topic of business model innovation and development



Source: own elaboration with the use of VOSviewer based on Web of Science Core Collection database.

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The competitiveness of a public hospital in Poland in the light of new regulations in the health care sector

JEL Classification: *I 11; I 19*; *L 32*

Keywords: *management in a health care entity; competitiveness; public management; public entrepreneurship; hospital*

Abstract

Research background: The health care sector in Poland is undergoing a continuous restructuring process that directly affects the functioning of treatment entities, especially hospitals. One of the key changes is the introduction of a system of basic hospital security of health care services. In this context, the question arises about the competitive management of a public hospital in Poland and the use of entrepreneurial management tools and the possible scope of these processes in the current external conditions. The aim of these efforts is to increase the efficiency of the health care sector, better tailor services to social needs, and improve the management of limited resources.
Purpose of the article: The aim of the article is to assess the possibility of increasing public hospital competitiveness in Poland in the context of new regulations in the health care sector.
Methods: The analysis will be carried out based on the analysis of legal acts and using the elements of the integrated enterprise competitiveness model by G.Głód and O.Flak.
Findings & Value added: Formulating recommendations for public hospital managers in the field of raising competitiveness and indicating the possibility of using appropriately adapted tools to assess the competitiveness in the private sector for entities operating in the public sector.

Introduction

Faced with the turbulent external environment characterized by fast advancing technologies and increasingly varying needs of public service recipients, the public sector requires changes improving its functioning. The measures adopted in this area may lead to generating alternative revenues, improving internal processes and developing innovative solutions aimed to meet social and economic needs. The issue seems to be of even more pressing nature in the light of the strategic importance of medical services to every human being, each patient's desire for an immediate resolution of every problem, coupled with demographic changes, which means it is practically impossible to provide a conclusive solution to such a need. This is mainly due to limited resources available within the health care sector, but also, indirectly, to the management of these resources, which is not optimal. These problems become particularly evident in the Polish public health care, which is undergoing a process of constant changes. Accordingly, not only threats need to be counteracted, but opportunities emerging in the environment of health care units must be identified and grasped. The aim of these efforts is to increase the efficiency of the health care sector, tailor services to social needs, and improve the management of limited resources.

In this context, the concept of the competitiveness of a public hospital seems to be relatively risky, while even the mere juxtaposition of the words is partially mutually exclusive.

The considerations presented above prompted the author to undertake an attempt to assess the competitiveness of a public hospital in Poland, which operates in a specific environment and, particularly, in a specific legal environment. In order to achieve this, he applied the methodology successfully used in the commercial sector. The study relates to the author's research interests in the competitiveness of enterprises (Flak, Głód, 2012), the functioning of health care entities in the aspect of public entrepreneurship (Głód, 2016), and practical experience originating in the implementation of a number of consultancy projects in the health care sector.

The competitiveness of a public hospital

Public health care entities belong to public sector entities. On the one hand, this choice stems from the importance of public health care and, on the other hand, problems related to its organization and financing, which is revealed in the constantly recurring question on how to cure health care. The main source of problems in the health care system lies primarily in the

limited financial resources available within the system, but its efficiency is also indirectly affected by the management of these resources, which is not entirely effective. These problems are particularly evident in the functioning of Polish public health care, undergoing a process of constant changes. In this context, the question arises about the impact of measures improving competitiveness at the individual and organizational level on the performance of public health care organizations in Poland.

The concept of hospital competitiveness appears relatively often in a variety of contexts in literature. It is used when attempts are made to determine the competitive position of a hospital using benchmarking. Benchmarking builds the understanding of the competitive position of a hospital compared to other entities, indicates the directions of strategic actions, identifies development potential and helps select or review the goals pursued by the hospital (Kanownik, 2014 p. 566). In this area, there are studies on competitiveness within medical clusters (Li, Xia, 2013). The concept also appears in the context of recommendations aiming to improve hospital competitiveness (Barros, Pacheco, 2016; Majchrzak-Lepszyk, Bober, 2016; Lu, Wang 2008).

Research methodology

The aim of the empirical study was to identify opportunities for increasing the competitiveness of public hospitals in Poland under current legislation. The study comprised: the Regulation of the Minister of Health on the method of determining the flat-rate system of the basic hospital provision of health care services, the Regulation of the Minister of Health on specific criteria for the selection of tenders in the proceedings on the conclusion of contracts for the provision of health care services, the Notice of the Minister of Health on the codification of the Regulation of the Minister of Health on the cover guaranteed in the area of hospital treatment.

In order to present a specific case study, legal regulations were referred to hospital treatment services in the field of vascular surgery. Then an attempt was made to assess to what extent the conditions in which public hospitals operate corresponded to the elements of the integrated model of enterprise competitiveness, developed by O. Flak and G. Glod. The assumptions of the model are characterized below.

The literature review combined with the author's research experience in the analysis of company competitiveness enabled the identification of the most important scope of interests and definitions within the integrated

model of competitiveness. The model consists of 5 elements (Flak, Głód, 2012, p. 57).

The first element is competitive potential, which consists of resources which a company owns or should own and which can be used to create or maintain its ability to compete. It refers to all of the enterprise capabilities resulting from its tangible and intangible assets. Competitive potential of a company is, at the same time, a relative multi-faceted concept.

The second element is competitive strategy. It is a plan adopted by a company with the intention to gain competitive advantage over other business entities operating in the external environment in order to meet an enterprise's prime goals and objectives.

The third element is competitive advantage which is defined as the ability of an enterprise to deliver material and immaterial values to its customers through the market. Competitive advantage is a relative multi-faceted concept.

The fourth is competitive positioning, understood as market and economic outcomes of an enterprise. These outcomes depend on the extent to which the abilities to compete have been or will be used.

What influences enterprise competitiveness is the business environment. In the integrated model of company competitiveness, the business environment is referred to as a competitive platform and it involves the characteristics of the environment which surrounds an enterprise in a given sector. The characteristics of the macro environment are the same for every enterprise operating in a given sector.

Figure 1 presents the visual representation and the situational context that enables competition.

Accordingly, the following question can be addressed: can the competitiveness model used in research into private sector enterprises be applied to assess the competitiveness of a public hospital?

Research results

Based on the assumptions of the integrated model of enterprise competitiveness, the table below proposes the assessment of the above-mentioned elements as presumed components of the competitiveness of a public hospital. In addition, the determinants of competitiveness affecting the improvement or deterioration of a particular component of enterprise competitiveness were evaluated.

The analysis presented in the table above is a preliminary attempt to test the possibility of applying the integrated enterprise competitiveness model

to assess the competitiveness of a public hospital. A thorough analysis requires a detailed operationalization of commercial competitiveness assessment tools in the areas characterized above.

Conclusions

The evaluation of hospital competitiveness is a dynamic, complex systems engineering (Lu *et al.*, 2010). The assessment of the competitiveness of a public hospital must, to a certain extent, also address the quality of its relations with stakeholders.

Additionally, it should be emphasized that public organizations have the opportunity to obtain resources using a mixture of social persuasion and public pressure, while competition between them tends to be more focused on gaining competitive advantage in the area of effective use of resources and, as a result, acquiring a larger pool of limited public resources (Frączkiewicz-Wronka, Szymaniec, 2013, p. 155).

The considerations presented in the article may encourage research on the competitiveness of a modern public hospital and, in practice, create conditions for its development in the future, although, as Rauch (2015) points out, the use of innovative initiatives in the transformation of health care can be problematic because people working in the sector need to change their mindset. It should also be pointed out that straightforward competitiveness, focused on financial performance at a cost of the health and life of patients, can pose a threat to the mission of organizations operating of the health care sector.

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Annex

Table 1. The evaluation of the elements of the integrated model of enterprise competitiveness in the process of the assessment of the competitiveness of a public hospital

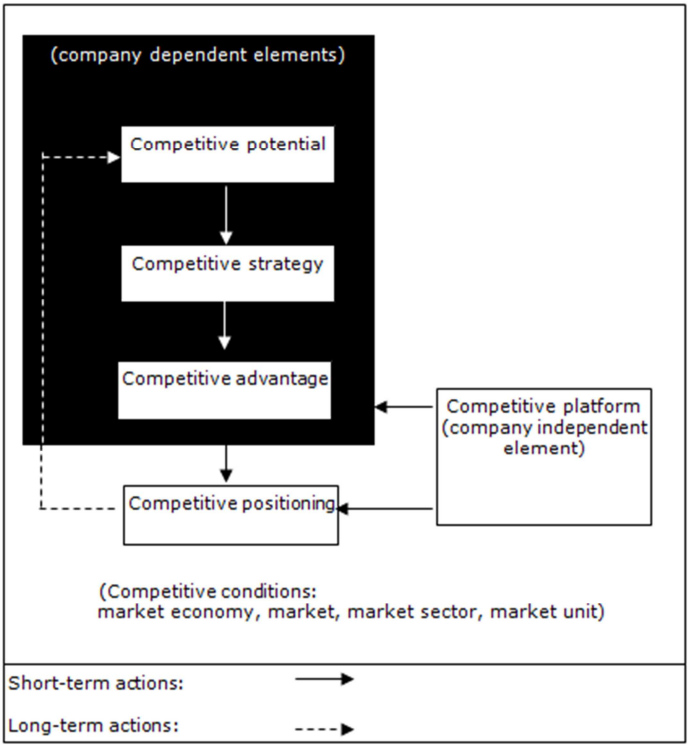
Element of the integrated model of enterprise competitiveness	Specific dimensions	Reference to the competitiveness of a public hospital	Determinants affecting the improvement or deterioration in the competitiveness of a public hospital
Competitive potential	finance	Adequate financial resources to provide cost-intensive health care services to ensure financial liquidity. Adequate investment activity and ensuring optimal sources of its financing. The possibility of performing new health care procedures, which will be unprofitable in the initial period.	With regard to improving financial potential, it is possible to apply elements of modern financial management, in particular controlling tools. Investment activities that reduce an entity's operating costs in the long term. Performing unlimited and profitable health care procedures. In the area of decreased financial potential, it is possible to indicate an insufficient pricing of health care procedures and increased costs resulting in deteriorating profitability.
	information	Adequate internal reporting and reporting to the public payer. Information flow in the hospital that enables the adequate coordination of activities and timely provision of services.	With regard to improving reporting, the computerization of a hospital, the appropriate development of processes and organizational structures, and effective communication with patients should be indicated. The failure to implement these solutions significantly reduces information potential.
	innovation	The possibility of introducing new health care procedures contributing to the adequate status of a hospital. Investment in medical equipment and staff training in order to implement innovative solutions in the field of health care services.	Improved innovation potential can be achieved through the consistently implemented development strategy of a hospital paired with the deliberate management of the innovation implementation process. This is a key component of a hospital's competitive potential in the context of improving or maintaining competitive position.
	staff	Staff with appropriate qualifications and experience. Ensuring the continuity of care through the appropriate organization of the working time of medical personnel.	Improvement measures should involve the implementation of an appropriate human resource strategy that aims to maintain and develop the competences of medical staff. The basic factor lowering competitive potential in this area is the situation on the labor market and the difficulty in ensuring competitive wage conditions.
	organization	Ensuring the accessibility of services provided together with complementary accompanying services and the ability to perform an appropriate number of health care procedures, including the required specification of hospitalized persons.	The improvement in organizational potential can be achieved through comprehensive development of services, which is perceived as a comprehensive process (diagnosis, treatment, consultation, rehabilitation, prevention). Conducting fragmented services can strategically lower organizational potential.
	equipment	Equipping a hospital with the necessary medical equipment and diagnostic infrastructure as well as ensuring adequate hotel conditions.	The possession of adequate equipment and infrastructure contributes to the improvement in material potential and the consistently implemented investment strategy. Inactivity in this area diminishes potential and even takes away the ability to conduct medical activities.
	technology	The use of the required medical technologies allowing the performance of specialized medical procedures.	The implementation of new medical technologies is a primary condition for being able to stay in the market of highly specialized health care services.

Table 1. Continued

Element of the integrated model of enterprise competitiveness	Specific dimensions	Reference to the competitiveness of a public hospital	Determinants affecting the improvement or deterioration in the competitiveness of a public hospital
Strategy of the competition	price-related	The price proposed by a hospital	The prerequisites proposed by the public payer and the possibility of using the economies of scale on the side of the hospital.
	quality-related	Evaluation of qualitative indicators in the competition procedure	A public hospital accreditation and integrated quality management systems
	market niche	The capacity for performing specialized medical procedures	The experience effect to the advantage or disadvantage of a hospital. The problem with the profitability of small-scale activity due to financial outlays and staffing constraints.
Competitive advantage	product-based	The scope of medical procedures.	Conducting activity in the scope required by the payer with a sufficient number of historically performed services.
	price-based	A competitive price compared to other service providers.	Prerequisites proposed by the public payer and adequate management of hospital costs.
	distribution-based	Attractive location	The location of a hospital in the context of maps of health needs and the adjustment of a hospital's profile to changes in this area.
	promotion-based	It does not formally exist.	The adequate organization of services, short waiting time for an appointment, access to complementary services and a hospital's reputation may be perceived by patients as a specific promotional advantage
Competitive position	Market share	Possible to measure based on information published by the public payer	Possible to increase primarily in the situation when other entities lose a contract or the payer increases the value of a contract..
	Financial performance	Assessment based on financial statements.	Doubts whether financial performance is a primary criterion for the assessment of a public hospital.
Competitive platform	Micro environment	Suppliers, recipients, entry and exit barriers, substitute products, competitors	The pricing policy of suppliers, the behavior of other employers on the labor market, the possibility of using alternative treatment strategies, a limited opportunity for a quick entry as a provider of highly specialized health care services.
	Macro environment	- international - cultural - demographic - economic - legal - technological	Legal conditions (stable solutions determining the functioning of public hospitals); the possibility of increased health care expenditure in Poland; the dynamics of demographic changes; the implementation cycle of new medical technologies.

Source: own elaboration.

Figure 1. The integrated model of company competitiveness



Source: Flak, Głód (2015, p. 122).

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Unscrambling the concept of project social efficiency evaluation based on management sciences

JEL Classification: *H43; O22; D04*

Keywords: *social efficiency; efficiency evaluation; project management, terminology*

Abstract

Research background: During planning and implementation, projects require estimation of their efficiency regarding planned and real profitability, necessary to make decisions and related risks. Striving to achieve desired goals in an effective and efficient manner without considering key social interests is not reliable and it is necessary to pay attention to the issues of social efficiency evaluation. The necessity of conducting studies regarding these issues is the result of identified needs of researchers, practitioners and decision-makers in the design and implementation of unique and complex activities that require evaluation from the point of view of social efficiency. Expansion of terms interpretation doubts, ordering and explanation of concepts may serve to obtain clarity of conducted discussions and scientific and research activities related to the evaluation of social efficiency of various types of projects. The authors of the paper will also attempt to determine the directions of further development of study on methods of evaluation useful in this field.
Purpose of the article: The main objective of this paper is an attempt to organize the concept of project social efficiency evaluation based on management sciences, and to provide bibliometric analysis of social efficiency topic.
Methods: Literature review, bibliometric analysis, observation.
Findings & Value added: Explanation of interpretation doubts and ordering of concepts related to social efficiency. Identification, elimination of errors and con-

fusions, which allows the development of research on methods and systems of social efficiency evaluation. Defining a research gap concerning relatively few publications regarding social efficiency in conditions of increasing interest in this field visible in the dynamic growth of the number of times social efficiency is cited per year. Identification of the most important publications in this field.

Introduction

In recent years, the growing importance of evaluation in management sciences resulting from the growing demand from practitioners, as well as the expanding theoretical achievements in the field of project management, which are financed from public and private funds, can be observed. The correct implementation of evaluation processes allows to reduce the risk of projects implemented in conditions of limited resources and constantly increasing requirements.

In the evaluation processes, the multi-aspect criterion of efficiency is of key importance and its measurement is sometimes quite a challenge, as it usually has not only quantitative but, above all, qualitative character. Evaluation processes often require various science based methods, the inclusion of more integrated approaches based on multiple goals and constraints (Suter & Cormier, 2008, pp. 478-485). It is essential to choose the suitable evaluation approaches (formative, summative, and developmental) for the relevant stages associated to the project life cycle (Grzeszczyk & Klimek, 2018, p. 134).

It is crucial to notice the research gap related to efficiency evaluation methodology regarding multidimensional methods that combine different qualitative and quantitative benefits, which have not only financial but also non-financial importance (Glodzinski, 2018, pp. 731-738). The evaluation should refer to the comparison of the obtained, multi-aspect effects of the projects in relation to the various resources consumed, thus take into account not only financial expenditures and achieved results, but also social effects of undertaken actions, public and European projects as well as development interventions (Grzeszczyk & Czajkowski, 2017, pp. 241-246).

Due to the multifaceted and interdisciplinary nature, the social efficiency notion does not have a uniform definition. It is also, among others, caused by a large variety of evaluated objects, the occurrence of several scientific trends, different ways of taking into account external factors and environmental influences. The lack of unambiguity in the understanding of issues related to social efficiency evaluation in the context of project management requires focusing on them.

It is necessary to draw attention to the notion of social efficiency, unscramble this notion, provide bibliometric analysis, and thus enable the development of research in this area within the field of project management. Despite existing scientific research on project evaluation, the issue of social efficiency is not scientifically exploited, especially in relation to development and public projects. Therefore, the main objective of this paper is an attempt to organize the notion of social efficiency on the ground of management sciences. The presented study uses the following research methods: literature review, bibliometric analysis and observation.

Project social efficiency evaluation

Evaluation can be defined as a process of systematic study of evaluated objects quality, merit and value (worth) using interdisciplinary research based on tools and methods from various scientific disciplines, i.e. social sciences, economics, logics, management, computer sciences and others (Scriven, 1991, p. 1). One of the basic evaluation criteria is efficiency. This concept is interdisciplinary, can be understood ambiguously depending on the context, the field of activity, the purpose of the evaluation process and experts involved in the process.

Efficiency is usually defined as the relation of obtained results to the expenditures incurred. In the field of project management, the measurement of this parameter may refer to the acceptance of the project for the implementation or conducting of the comparative analysis and selection of the most profitable project from the analyzed set of alternative variants – with biggest ratio of results to expenditures.

In the context of evaluating the multidimensional project efficiency, one should mention the issue of social impact assessment, which concerns the determination of positive and negative, primary and secondary, mainly long-term environmental and social effects related to the implementation of various types of activities, public interventions and projects. In particular, social impact assessment is often a strategic instrument supporting the management of social consequences of implementation of development projects aimed at building a sustainable biophysical and human environment (Wong & Ho, 2015, p. 124).

Social impact assessment and the notion of social efficiency concern study of processes of allocation of resources used and the assessment of the effects of conducted interventions and implemented projects, by determining their impact on society at local and regional levels. In the range of this type of research, for example, comparative analyzes of the benefits ob-

tained by individuals, communities, organizations, etc. are carried out. These analyzes relate to the comparison of the final state of stakeholders with the state before the start of implementation of the evaluated projects or in relation to the stakeholders whose activities they did not cover. Information is obtained regarding the impact of the projects and programs implemented on their stakeholders, the efficiency of resource use and measurement of the results obtained.

Social efficiency evaluation can lead to positive and negative conclusions and suggest implementation of actions motivated by responsibility for the projects implemented or the willingness to learn based on the conclusions drawn. The results of research regarding social efficiency evaluation most often strongly depend on the context of conducted research and the experience of analysts involved (Sagna, 2004, p. 14). This state is reflected in the methods and tools applied for this type of purposes.

These methods are not always properly selected, because there is a lack of sufficient literature in this area, and institutions that sponsor projects and ordering evaluations often do not specify how to conduct the evaluation processes and useful methods in this area (Parsons, Everingham & Kemp, 2019, pp. 114-123). As a result, processes of social efficiency evaluation are carried out in various ways, which are not always adequately selected and ensure correct results and recommendations.

The difference in measuring social efficiency in contrast to other types of efficiency assessment is mainly related to the extent of intangible assets and barriers related to the occasional need to present monetarized social effects. The social efficiency indicator can be determined by dividing the following two parameters: obtained social effects in a given time and expenditures incurred during the project implementation. Among the gained social effects the following may be observed: new jobs, educational impact, improvement of health protection, raising the quality of life, combating poverty, reducing social exclusion and others.

Project social efficiency evaluation is most often made using the Social Return on Investment (SROI) method, which allows for the inclusion of non-financial values related, for example, to environmental or social impact of evaluated projects on stakeholders. This method is designed to understand the impact, manage and report on the social value created by an organization (Millar & Hall, 2013). The SROI value can be determined after identifying key stakeholders, defining the boundaries of social aspects for the conducted social efficiency evaluation, applying the theory of change for building the logical structure of the evaluated project and monetization of social effects of the project.

To measure social value creation, apart from SROI, the social accounting method is also used. This method is not based on monetary values, it does not allow to estimate the social return on investment and direct measurement of the project social efficiency. A similar situation occurs with the sustainability reporting method, which also takes into account economic, social and environmental values creation.

Cost-Benefit Analysis (CBA), similarly to SROI is based on the use of monetary values to estimate project social benefits. CBA is a very complicated method and is intended rather to carry out comprehensive evaluations of large projects. SROI is much simpler and more useful in terms of project social efficiency evaluation.

Data and research methodology

In the research regarding unscrambling the concept of social efficiency on the ground of management sciences, in addition to observation, literature review and bibliometric analysis were used. These bibliometric analyzes were carried out for the cited scientific literature from this range found in ISI Web of Science databases and existing there in the last twenty years. The results of these analyzes allow to formulate conclusions regarding the development of social efficiency research within selected web-based categories, identifying the most important publications of key importance for this kind of research.

Data for bibliometric analysis were downloaded from the ISI Web of Knowledge database on April 2019. The following search parameters were used:

- basic search for “social efficiency” topic,
- timespan 1998-2018,
- refined by the following Web of Science Categories - economics, management, business, operations research management science, social sciences interdisciplinary, social sciences mathematical methods and development studies.

Results

In total, in seven Web of Science bases, 215 publications were found, which contain in their title, abstract or key words the notion „social efficiency” and are associated with economics, management and social sciences. The number of publications in individual indexed databases are as fol-

lows: Social Sciences Citation Index (142), Conference Proceedings Citation Index-Social Sciences and Humanities (47), Science Citation Index Expanded (35), Conference Proceedings Citation Index-Science (23), Emerging Sources Citation Index (21), Book Citation Index-Social Sciences and Humanities (3) and Book Citation Index–Science (2).

Citation report for 215 results from Web of Science Core Collection is as follows:

- h-index 23 (average citations per item 10,14),
- sum of times cited 2126 (without self-citations),
- citing articles 2034 (without self-citations).

Sum of times cited per year increased from a value of one in 1998 to a value of 278 in 2018. Over the years there is a clear upward trend. A relatively small number of publications in this field can be observed (only 112 publications included in management sciences), thus there is a gap that is worth filling.

Conclusions

The conducted research shows a significant potential existing in the area of social efficiency research. They have only an initial character and require further development (especially in project management field) using more sophisticated bibliometric instruments.

The dynamic growth of the number of times cited per year is a sign of an increase in interest in this field. Relatively few publications, however, make it difficult to unscramble the concept of project social efficiency evaluation. It proved to be utterly impossible to identify most prolific authors in this field, majority of authors have published a low number of papers identified within bibliometric analysis. There is, therefore, a gap in this area, which should be filled with research related to the organization of terminology and understanding of this notion. Publications clearly explaining the notion are still lacking.

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Advertising of the pharmacy and its activity considering the theory of enterprise competitiveness

JEL Classification: *E62; K20; K32; K33*

Keywords: *advertising, competitiveness, enterprises, national economy, pharmacy activity*

Abstract

Research background: On a macroeconomic scale, competitiveness is conditioned by both the actions of institutions at the central level, decisions taken by the legislative and executive authorities, as well as the potential of entrepreneurship, which is diversified depending on the level of socio-economic development of society. In turn, the economic, legal and administrative environment created by the state has a significant influence on the possibilities and way of conducting economic activity, because this environment shapes the external factors of the enterprises competitiveness.
Purpose of the article: The purpose of this article is the legal-economic analysis regarding advertising of pharmacies and their activities, taking into account a broad spectrum of doctrinal and jurisdiction views. The subject of the analysis is the function and significance of advertising as shaping the potential of enterprise competitiveness in the context of pharmacy activity.

Methods: The article uses the method of legal regulation analysis.
Findings & Value added: Taking into account the admissibility of the statutory limitation of the principles of shaping an enterprise competitiveness potential, the necessity should be emphasized of correct interpretation of the law, taking into account the objectives of the introduced restriction and applying only a proportional and adequate mechanism for sanctioning its infringements. In the context of the activities of pharmacies, as public health care facilities, the above remarks have special significance. The undisputed supremacy of the public purpose of a pharmacy activity can not deny the importance of an economic goal as the basic mechanism of an enterprise activity, the achievement of which is an economic guarantee of the public purpose implementation.

Introduction

The level of enterprise competitiveness depends on specific factors which need to be considered in the macro, meso- and microeconomic scale. The macroeconomic factors include the size and structure of production resources, the effectiveness of the use of production resources, the socio-economic system and the economic policy of the state and the possibility of affecting the international environment. Among the mezoeconomic conditions, it is necessary to indicate the equipping with production factors, demand factors, shaping of the appropriate industry layout, as well as the conditions for creating, organizing and managing the enterprises influenced by industry-unique factors, i.e. factors that are only applicable in a specific industry or a few selected industries and shape the nature of competition on the domestic market. The group of microeconomic factors includes the competitive position achieved in the past, the competitive potential of the enterprise and the competitive strategy (Chang & Cheng, 2018, pp. 458-473).

There is a strong interdependence between factors that affect the increase in the competitiveness of the national economy and the actions of enterprises to improve their own competitiveness. The competitiveness of an enterprise, on the one hand, reflects successful management practices on the part of entrepreneurs, on the other hand, the competitiveness of an enterprise comes from the strength and efficiency of the national economy production structure, its technical infrastructure and other factors determining external effects that may form the basis of the enterprise activity (Chesnais , 1988, pp. 51-119). On a macroeconomic scale, competitiveness is conditioned by both the actions of institutions at the central level, decisions taken by the legislative and executive authorities, as well as the potential of entrepreneurship, which is diversified depending on the level of

socio-economic development of society (Zhou *et al*., 2019). In turn, the economic, legal and administrative environment created by the state has a significant influence on the possibilities and way of conducting economic activity, because this environment shapes the external factors of the enterprises competitiveness (Cerne *et al*., 2015, pp. 429-449).

Conducting pharmacy activity is a special type of economic activity. The social significance and the essence of services provided as part of the pharmacy remains closely related to the profession of a pharmacist as a profession of public trust, and the pharmacy itself constitutes, in accordance with the statutory classification, a public health protection facility. The indicated supremacy of the public purpose over the economic purpose determines the principles of conducting pharmacy activity, including the principles of advertising of pharmacies and their activity (Foley *et al*., 2018, pp. 327-333; Aikin *et al*., 2015, pp. 596-618; Cassati *et al*., 2012, pp. 228-245; Cooper, 2013, pp. 254-262).

The purpose of this article is the legal-economic analysis regarding advertising of pharmacies and their activities, taking into account a broad spectrum of doctrinal and jurisdiction views. The subject of the analysis is the function and significance of advertising as shaping the potential of enterprise competitiveness in the context of pharmacy activity, including the interpretation of legal basis taking into consideration the process issues of using sanctioning mechanisms.

Research methodology

The subject of this article is to analyse current legal solutions, including in particular determining the regulation of pharmacy activity, taking into account advertising of pharmacies and their activities. The above analysis is carried out in the light of the theory of enterprises competitiveness. The article uses the method of analysis of legal regulation and the descriptive method.

Concepts of the enterprise competitiveness

Competitiveness is the result of many factors and many institutions activities, among which the state and its economic policy play an important role (Costantini & Mazzanti, 2012, pp. 132-153). The possibility of achieving business success by enterprises is determined to a large extent by the economic environment in which they operate (Coccia, 2017, pp. 1048-1061). It

is the public authorities that define the economic system, which is the environment more or less favorable to gain a competitive advantage by enterprises. The competitiveness of an enterprise can be defined as the enterprise ability to function in a given industry in the free market economy. At the same time, there is a dependence that the greater the competitiveness, the more reliable the position of the enterprise in the market, and its operation is less exposed to external factors and unfavorable economic conditions. The enterprise competitiveness is its ability: 1) to design, manufacture and sell goods with more attractive prices, quality and other values than the corresponding features of goods offered by competitors, 2) of sustainable development and to achieve, maintain and increase market shares, 3) to raise the efficiency of internal functioning by strengthening and improving its market position, 4) to achieve and maintain a competitive advantage, 5) to constantly provide a suitable set of competing instruments. In addition, the enterprise competitiveness is worth considering also in relation to the enterprise ability to increase the value in use perceived by the client (basic competitiveness) and predispositions to gain a lasting competitive advantage in a given market (key competitiveness). Therefore, in a broader perspective, the phenomenon of competitiveness is multilayered and can be described as the ability of enterprises, industry departments, regions and states to obtain a relatively high and stable income and employment level in conditions of international competition.

Legal conditions for advertising of pharmacies

Advertising of pharmacy and its activities as well as the rules for advertising of medicinal products are subject to the regulation of the Pharmaceutical Law of September 6, 2001 (consolidated text JoL of 2017, item 2211, hereinafter: Pharmaceutical Law or a.p.l.). The legislator clearly differentiates advertising in both of the above-mentioned areas, prohibiting the advertising of pharmacies and their activities, and at the same time allowing advertising of a medicinal product, the conduct of which, however, has been subject to certain restrictions. This distinction was reflected in court jurisdiction, according to which "*regardless of whether we are dealing with advertising of a medicinal product, or advertising of a pharmacy or its activity, it is about increasing the revenue in relation to forecasted revenue that would have been achieved if no advertising action was taken.. However, the legislator recognized that in the case of a medicinal product the properly shaped advertising activity may entail certain social benefits, so in principle it allowed the possibility of conducting it. However, the legislator*

acted conversely in the case of advertising of pharmacy or pharmacy point, or their activity" [SAC, 11.10.2016 a]. Concentrating the scope of the deliberations within advertising of pharmacies activities, it should be noted that the legislator did not decide on the normative creating of the definition of this type of advertising by correlating it only with the informing function. According to art. 94a para. 1 a.p.l. *advertising of pharmacies and pharmacy points and their activities is prohibited. Information about the location and working hours of the pharmacy or pharmacy point do not constitute advertising.* This prohibition falls within the subjective extension under art. 94a para. 1a a.p.l., according to which *advertising of non-pharmacy outlets and their activities relating to medicinal products or medical devices is prohibited.* Prohibition of advertising of a pharmacy, which is a public health protection facility, finds therefore an appropriate reference in the activities of other market enterprises, conducting retail trade in medicinal products issued without a doctor's prescription and therefore qualified as non-pharmacy outlets. The advertising ban is, however, limited in this case to the prohibition of exposure only to that part of the activity and those commercial services which in the context of patient access to the medicinal product and formulating consumer habits are in correlation with the pharmacy activity.

The restriction concerning conducting advertising of pharmacies has been introduced into the Pharmaceutical Law pursuant to art. 1 point 79 of the Act of 30 March 2007 amending the Pharmaceutical Law Act and amending certain other acts (JoL of 2007 No. 75, item 492). Art. 94a a.p.l. formed under the above act in the original version did not formulate an absolute prohibition on the advertising of the pharmacy and its activity as such, but included in its scope the circulation of certain medicinal products or medical devices. This provision was as follows: *the advertising is prohibited of activities of pharmacies or pharmacy points addressed to the public, which directly refers to medicinal products or medical devices placed on lists of reimbursed drugs, or medicinal products or medical devices with the same name as medicinal products or medical devices placed on those lists.* The scope of the indicated restriction on advertising was significantly different from the current strict ban on advertising of the pharmacy and its activity. It should also be highlighted that in the original version the provision of art. 94a a.p.l. did not refer to the advertising of non-pharmacy trading facilities and their activities. Disposition of art. 94a, a.p.l., in the version currently in force, was introduced under art. 60 point 7 of the Act of 12 May 2011 on reimbursement of medicines, foodstuffs for particular nutritional uses and medical devices (JoL of 2011 No. 122, item 696, hereinafter the Reimbursement Act). According to the justification of

the above-mentioned draft Act, change of art. 94a a.p.l. was dictated by the need to strengthen the protection of patients and public finances against the negative effects of pharmacy advertising, determining that "*the objectives of entrepreneurs running pharmacies, including the maximization of profit, must be subject to the requirements resulting from the need to protect the health of patients*" (justification of the draft Act – parliamentary document VI.3491) [SAC, 14.01.2015]. In the literature of the subject, however, it is noted that the amendment of art. 94a a.p.l. in the direction of a restrictive ban on advertising of pharmacies and their activities, did not find a clear justification, and the objectives for which it was to serve, consisting in elimination of fraud related to the turnover of reimbursable products, could be implemented by other provisions of the Reimbursement Act. It is also pointed out that at the basis of the *ratio legis* of the amendment of art. 94a a.p.l., there was no conviction about the inadmissibility of informing about the pharmacy and its activities in every area of information and that such an interpretation of art. 94a. departs from the adopted legislative assumptions. The prohibition of advertising of pharmacies and their activities was, however, covered *ex post* by the justification of the Minister of Health and representatives of the pharmacy self-government, according to which this prohibition aims to protect public health, including limiting the tendency among patients to self-heal, abuse drugs, and to buy medicines in amounts that do not meet the actual therapeutic needs. In addition, according to the representatives of the pharmacy self-government, the prohibition of advertising in the previous version gave rise to the development of negative practices and activities significantly deprecating pharmacies and affecting the essence of the profession of pharmacist. Considering that the essence of conducting pharmaceutical activities is the provision of pharmaceutical services, i.e. providing services covered by the pharmacist's profession as a profession of public trust, strengthening the quality of pharmaceutical services at the expense of limiting the tools of market expansion and progression of consumer market conditions should be considered justified. The adopted solution corresponds to the analogue restrictions applicable to other professions of public trust, including the doctor's profession. According to art. 14 para. 1 of the Act of 15 April 2011 on medical activity (uniform text JoL of 2018, item 160): *the entity performing medical activities publishes information on the scope and types of health services provided. The content and form of this information can not have the features of advertising.* Correlated with the above solution is the change in the Pharmaceutical Law, which entered into force on June 25, 2017 and under which the right to obtain a pharmacy permit was limited only to persons with the right to practice as a pharmacist, being guarantors of the proper standard of provid-

ed services, however, this restriction does not apply to entities that, before the amendments to the Act came into force received the above permit, or at least applied for it.

Taking into account the supremacy of the pharmacy public purpose, i.e. protection of public health, and considering the subsidiarity of achieving economic goal by the pharmacy, the legitimacy should be recognized of a normative extension of the ban on pharmacy advertising in the form of binding regulation. The function of a pharmacy as a public health protection unit should be referred to the activity of a pharmacy as an enterprise, and thus the legal admissibility of restriction by the legislator of a constitutional principle of economic activity freedom, expressed in the statutory ban on advertising of conducted activities. The recognition of the above subject in the context of the ban on advertising of pharmacies and their activities is the subject of the court-administrative jurisdiction, according to which *"pharmaceuticals are not a classic commercial product. Their production, but also turnover are regulated by law. This circumstance is not therefore without effect on the situation of entities involved in economic activity in this respect. The situation on the pharmaceuticals market depends largely on their attitudes. Interference with this freedom is therefore justified by the legal right protected in this way. Limiting the advertising of pharmacies activities seen in the context of the pharmaceuticals sold is to even potentially protect human health and life from the adverse effects of pharmaceuticals. The principle of freedom of economic activity gives way to an important public interest within the meaning of art. 22 of the Constitution of the Republic of Poland"* [SAC, 25.08.2016]. Particularly noteworthy is the position of the Supreme Administrative Court, according to which, if we look at the protection of human health *"through the prism of damage that can be done to it not only through lack of proper access to pharmaceuticals, but also through <<excessive>>, or rather too easy access to them, stimulated, among others by all <<promotions>>, as a result, it should be concluded that in this way specific habits are made in a particular group of consumers, such as pharmacy customers, of purchasing pharmaceuticals, which may lead to the abuse of these substances. A further consequence of such action is the weakening effect of drugs, through their excessive and unjustified with the patient health state consumption"* [*SAC*, 25.08.2016].

Conclusions

Each enterprise operates in a specific environment that provides the means necessary to conduct an economic activity and is a recipient of goods and services offered by enterprises. This environment is the source of the factors shaping the competitiveness of an enterprise for which it has no real impact. These are different types of standards, which on the one hand regulate technical and technological processes (technical and ecological standards), and on the other hand regulate market behavior, which is covered by international and national legal regulations (legal norms). This means that external factors of the enterprise competitiveness are determined by the rights resulting from the application of the standards regulating the economic system, according to which enterprises are obliged to conduct their economic activity. In turn, internal competitiveness factors are associated with activities that are the result of making specific decisions in the company.

The impact of legal norms on the competitiveness of an enterprise should be considered both from the perspective of national law that is in force in the given country, and international law, which is applied in connection with conducting economic activity in the international market – e.g. in the single European market.

Taking into account the admissibility of the statutory limitation of the principles of shaping an enterprise competitiveness potential, the necessity should be emphasized of correct interpretation of the law, taking into account the objectives of the introduced restriction and applying only a proportional and adequate mechanism for sanctioning its infringements. In the context of the activities of pharmacies, as public health care facilities, the above remarks have special significance. The undisputed supremacy of the public purpose of a pharmacy activity can not deny the importance of an economic goal as the basic mechanism of an enterprise activity, the achievement of which is an economic guarantee of the public purpose implementation.

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Identification of specifics in the system of remuneration of top managers on the basis of an analysis of selected companies in the Czech Republic

JEL Classification: *D91; J33; M52*

Keywords: *compensation for work; remuneration of CEOs; human capital; management*

Abstract

Research background: Knowledge, skills and abilities have become the principal growth factors in our knowledge economy. A select group of employees (highly-placed managers), in particular, must meet all these expectations, for which reason their remuneration is more complex and complicated. This is also accompanied by new forms of evaluation and remuneration. A relationship between their remuneration and measurable indicators may provide significant help in defining a set of recommendations for effective remuneration.

Purpose of the article: This paper examines the contemporary issue of the remuneration of a select group of employees in companies in the Czech Republic. The specified factors that have an influence on the level of remuneration of these employees are given in the empirical section of the paper. Remuneration is a specific component of company management, for which reason the initial premise as to whether the size of a concern influences the level of remuneration of its managers was defined, while the connection between the development of the economy and the level of remuneration was also studied.

Methods: Data collection for the empirical research was conducted through a structured questionnaire, which was subsequently evaluated with the use of mathematical and statistical methods, and sent out to the selected companies. Basic

hypotheses were determined, and a chi-square test, which was the most appropriate method of verification, used to confirm or invalidate them.
Findings & Value added: The analysis performed shows that management remuneration is dependent not merely on the size of the company, but also on the development of the economy. The paper presents a simplified model identifying the most important factors influencing the remuneration of top management. These results may be used for the creation of a new methodology for remunerating this group of employees, which may contribute to the effective evaluation of top management and contribute to company development.

Introduction

Since 1990 remuneration for top managers (*CEOs*) in the USA has outpaced company profits, economic growth and the growth of other workers' remuneration. Between 1980 and 2004 the founder of unit trust funds, John Bogle, estimates that the total compensation of top managers has grown by 8.5% a year in comparison with a growth of 2.9% a year in company profits and a growth of total gains for the population of 3.1% (Bogle, 2011).

According to Merhebi *et al.* (2006) international evidence confirms a significant connection between the size of a firm and the remuneration of a given firm and its top manager. The supposition is that the largest firms hire the best and most effective managers in order to maximise productivity. Empirical evidence supports this theory (Oetomo & Swan, 2003), which means that the size of a firm partly predetermines the required managerial abilities.

From research conducted by Merhebi *et al.* (2006) it further follows that there is a significant correlation between managers' remuneration and the development of the given sector and the market.

Remuneration is a critical component of strategy, which influences the performance of the whole company in that it motivates the employees and attracts and retains employees with high qualifications (Gerhart *et al*., 2009), and where employees' salaries represent 60-90% of the average outgoings of the company

Most of the research work linking executive compensation with the company's strategy rests on the principal-agent theory (agency cost) and centres on performance-based compensation. Its influence on company strategy is undeniable (e.g. Dalton *et al*., 2007; Wowak & Hambrick, 2010), given the importance of addressing and recruiting senior managers and their financial incentives in decision-making.

Opinions on how to create the best contract for rewarding managers vary widely in practice. It is possible to delineate two main groups of opin-

ions, which diverge fundamentally. The first group holds to the view of the capital market and emphasises that in companies which enter the capital market the remuneration of managers can also be linked to the development of the price of shares (*stock price*) and then the market price of shares and the profit on shares are the indicator. The second group of opinions holds to the traditional internal efficiency criteria, which are based on the account size of its management's results, of its profits and the concept of economic added value (Holečková, 2006).

Coffee (2005) describes the negative effects of option programmes in a system of remuneration for senior management when this form of remuneration gave rise to the influencing of accounting reports for the purpose of increasing the price of shares.

According to Stern and Willett (2014) remuneration based on the EVA (Economic Value Added) indicator is the most appropriate, and not only for senior management level; this form of remuneration is also appropriate for the whole organisation and has to be applied from top to bottom. If we could strip out the state of the economy, which represents roughly 50% of the performance of a joint-stock company, and on top of that the influence of the industry, which accounts for another 25%, we would obtain a measure of what the management has actually achieved. From this it follows that 75% of the share value is influenced by factors which have nothing to do with the management of the company. Moreover, Stern and Willett (2014) states that thanks to the form of remuneration based on the EVA indicator it is possible to remunerate management even in times of recession, which increases their motivation. By analysing the situation in a company where this system of remuneration has been introduced, it was discovered that where there was a very unfavourable market situation and demanding conditions of the industry, the performance of the managers was at a very high level.

Research methodology

This paper focuses on the remuneration of top managers in companies in the Czech Republic. The aim of the paper is to investigate the present-day methods of compensation for work done and to identify the factors that influence the level of remuneration. Subsidiary aims have been the collection and analysis of measurable parameters that influence remuneration, ascertaining the means and forms of remuneration and gathering information on workers' motivation.

Scientific journals and papers taken from the Web of Science and Scopus databases were analysed within the framework of secondary research. This study applied a quantitative approach to investigating this research problem. Quantitative research was carried out in August and September of 2018 and was conducted using a structured investigation questionnaire. The research was developed on the basis of results obtained from foreign academic works and studies and also on the basis of the authors' own knowledge of the problem under investigation. The questionnaire was distributed in an online version in order to reach a wider spectrum of respondents and was aimed at senior managers in large companies in the manufacturing sector in the Czech Republic. Large companies were selected as per the European Commission Regulation No. 800/2008, namely, according to the rules regarding the number of employees and the size of the turnover of the company. The companies had to meet the conditions of a minimum number of 250 employees and a minimal turnover of 50 million euros. Four hundred and forty-four companies were chosen from the Amadeus database, and 75 responses were received. The questionnaire respected the ethics and anonymity of the respondents. Mathematical-statistical methods were used in evaluating the results of the research. This paper represents only part of the results obtained. The research hypotheses were verified using the Pearson statistical method (the chi-square test). This test is designed to evaluate the relationship between categorical variables.

The Pearson test ranks among the so-called goodness-of-fit tests. This type of tests is used when only one X indicator in a basic set is being measured. This indicator is a random variable of either a qualitative or a quantitative type.

The establishing of a zero hypothesis H_o is essential in this type of testing. This hypothesis arises from the supposition that any deviations discovered are random. On the other hand, the alternative hypothesis H_1 arises from the supposition that any deviations are not random, and it is tested in an appropriate critical region (Hendl, 2009).

The Kendall Coefficient of Rank Correlation is a type of a coefficient which has a simple probabilistic interpretation. Its theoretical value is commonly referred to as Kendall's tau. The statistics are based on inversions between rankings. They are based on data concerning metric or ordinal evaluation of n objects according to two criteria X and Y, where an evaluation (xi, yi) is assigned to each object i. The pairs must be arranged so that xi values are ranked in an ascending order (Hendl, 2009).

Results

The initial hypothesis which the authors seek to confirm in this paper is the close relationship between the size of a company and the level of remuneration of its senior management. The theoretical research suggests that the bigger the company the higher the remuneration for its senior managers. The questionnaire survey showed that the average gross monthly salary of the respondents was 103 833 CZK.

To confirm this hypothesis, the companies in the survey were ranked by size defined by the number of employees. The answers in the questionnaires were aggregated into selected intervals and the interdependence between the two elements is set out in Table 1.

On the basis of the Table above it is possible to compare the result of the test according to chi-square statistics and either to confirm or reject the zero hypothesis.

H_0: *The size of the company does not influence the level of the gross monthly salary of the manager.*

H_1: *The size of the company influences the level of the gross monthly salary of the manager*.

Using the Pearson chi-square test, no dependence was confirmed, however the test is one of the most basic statistical methods which use unsorted data. As the authors used sorted data, they make use of Kendall's correlation coefficient, otherwise known as the Kendall's tau. During this test the data were sorted and concretized.

On the basis of the significance test for Kendall coefficient, we found a strong association between the selected variables at 5 % level of significance. This significance is at a level of 0.009 (Table 2).

There are other factors which influence the level of remuneration for senior managers, including, *inter alia*, the influence of the state of economy. According to Stern and Willett (2014) the state of the economy and industry account for 50% and 25% of corporate performance, respectively. In that case, what management really achieved represents only 25% of their company's performance. On the basis of this premise an attempt has been made to ascertain the relationship between the performance of the economy and the level of remuneration of managers in the Czech context.

The median monthly gross salary is shown in the table under the section "The highest company representatives" as calculated by the methods used by the Czech Statistical Office. On the basis of Table 3, the following hypotheses were defined:

H_0: *The level of a median monthly gross salary is not dependent on the size of the real GDP.*

H_1: *The level of the median monthly gross salary is dependent on the real GDP.*

It follows from the correlation analysis applied to the foregoing variables that there is a relationship between the variables. The value of the Pearson coefficient was 0.913. Such a value represents too high a dependence, and for this reason a further statistical test could be recommended to confirm this dependence. The significance is 0.000, by which the statistical relationship between the variables is confirmed.

When creating an executive compensation scheme, it is necessary to very carefully select its structure, because it has a significant influence on the resulting level of remuneration. A shareholder has a very strong interest in seeing that the value of the company increases, for his dividends grow with the increasing value of his shares. A manager who has no ownership interest in the company, on the other hand, will not see any salary rise if the value of his company increases, nor will it gain him any supplementary rewards or bonuses. If a manager has only a negligible ownership interest in the company then the company value will have very little leverage when it comes to his motivation (Young & O'Byrneho, 2001).

As reported by Jančíková (2018), there exists a dependence between the possibility of acquiring an ownership interest in a firm and the economic activity as categorised by CZ NACE. For the purposes of the empirical research, firms in the manufacturing sector were chosen, nonetheless, the sample was relatively wide and there are differences between individual firms in this category. Using the chi-square test, a strong correlation was discovered between these chosen variables, with the significance at a level of 0.043 (Jančíková, 2018).

Based on literature search and our empirical research of the system of remuneration, we were able to identify certain factors which have the greatest influence on the system of remunerating a senior manager in the Czech context. We divided our model into three basic pillars, which we call "stage of manager's life", "company characteristics" and "company performance".

The aspects in the pillar "stage of manager's life" are his age, length of employment and his relationship to the company (i.e. whether he has any ownership interest in the firm or not). Aspects under the heading of "company characteristics" concern the type of incorporation, the company's life cycle, the number of employees (or size of the company) and whether the company is part of a multi-national corporation and thus operates the parent company's system of remuneration. The third pillar, "company performance", records trading income, the size of market share and the manager's professional performance.

Conclusions

How workers are remunerated is an on-going and topical matter and the best possible ways are being sought to create a contract which ensures the workers' motivation, their loyalty and which, with regard to senior mangers, lowers the agency costs by harmonising the interests of owners and management. There are two main ways of remunerating senior managers, which we set out in the Introduction to this paper. In addition, this paper analyses the factors which have an influence on remuneration in companies in the Czech Republic. In the paper the authors demonstrated the link between the size of a company and the level of remuneration for managers, just as it was confirmed that the level of remuneration is conditioned by the development of the gross domestic product of a given country, i.e. indeed by the economy as a whole. The main thrust of this paper has been to define a model of remuneration which rests on three pillars, namely, the stage of the manager's life, the company characteristics and company performance.

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Annex

Table 1. Ascertaining the relationship between the level of remuneration and the number of employees

	Number of employees			
Income category	**up to 500**	**501 - 1000**	**1001 - 1500**	**over 1500**
up to 50 000 CZK	5	4	1	1
50 001 - 75 000 CZK	6	9	1	0
75 001 - 100 000 CZK	2	7	0	4
100 001 - 125 000 CZK	1	2	1	0
125 001 - 150 000 CZK	3	8	2	3
150 001 - 175 000 CZK	1	2	2	0
175 001 - 200 000 CZK	1	1	1	0
over 200 000 CZK	0	2	0	3

Source: authors' own processing

Table 2. Expression of the dependence between the two elements by means of the Kendall's tau

		Approx. Sig.
Nominal by Nominal	Contingency Coefficient	0,159
Ordinal by Ordinal	Kendall's tau-b	0,009
	Kendall's tau-c	0,009

Source: authors' own processing.

Table 3. The development of the median gross monthly salary and the real GDP

YEAR	**Median monthly salary (CZK)**	**Real GDP (millions CZK)***	**YEAR**	**Median monthly salary (CZK)**	**Real GDP (millions CZK)**
2018	67 353	unpublished	**2008**	53 546	4 069 840
2017	58 573	4 601 132	**2007**	49 497	3 963 527
2016	56 342	4 412 049	**2006**	46 474	3 753 246
2015	55 339	4 306 516	**2005**	44 594	3 512 515
2014	55 686	4 089 400	**2004**	41 503	3 297 100
2013	53 130	3 981 303	**2003**	39 311	3 142 892

Table 3. Continued

YEAR	Median monthly salary (CZK)	Real GDP (millions CZK)*	YEAR	Median monthly salary (CZK)	Real GDP (millions CZK)
2012	50 554	4 000 653	**2002**	36 674	3 033 592
2011	41 189	4 032 910	**2001**	33 929	2 984 277
2010	56 164	3 962 464	**2000**	31 585	2 899 925
2009	54 437	3 874 383			

* The values of the real Gross Domestic Product derive from measurements of the Czech Statistical Office. The GDP was calculated by the expenditure method and adjusted to 2010 prices to compensate for the effects of inflation.
Source: CZSO, 2019; MLSA, 2018.

Table 4. Testing the dependence of the variables using the chi-square test

	real HDP	
Median gross monthly salary	Value	Approx. Sig.
Pearson's R	0.913	.000[c]

Note.: c – Based on normal approximation.
Source: authors' own processing using the IBM Statistics v. 22.

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The selected task of management of logistics customer service

JEL Classification: *L21; L91*

Keywords: *management; logistics customer service; transport enterprises*

Abstract

Research background: It is not easy to clearly determine the definitional approach indicating appropriate criteria of logistics service for diverse customer needs. Detailing the needs associated with logistics customer service in the enterprise desired by customers and taking into account their point of view requires recognizing customer expectations towards individual components of this service. The main task areas of management of logistics customer service include, among others, conducting interviews with customers.
Purpose of the article: The objective of the paper is to approach the essence of the selected task of management of logistics customer service, i.e. conducting interviews with customers in order to determine the significance of the service itself and its individual components in commercial freight transport companies in the Silesian Voivodeship.
Methods: In order to determine the essence and the level of implementation of the selected task of management of logistics customer service in the activities of commercial freight transport companies in southern Poland in the area of the Silesian Voivodeship, the own research was carried out. The applied cognitive method was the survey method within the framework of which the categorized technique of acquiring primary information was used, i.e. the questionnaire.
Findings & Value added: The full understanding of the needs associated with the level of logistics service desired by customers and taking into account their point of view was indicated by the smallest number of entrepreneurs among the respondents. A total lack of perception of the need to recognize the expectations of customers towards individual components of customer service expressed by approximately a third of the surveyed entities is rather disturbing. At the same time, it has been found that the entrepreneurs in larger economic entities conduct the research

among customers more thoroughly and more often. As much as 40.2% of microenterprises do not attempt to conduct interviews with their customers.

Introduction

The multidimensional sphere of customer service partially covers the areas of marketing, finance and other strategic areas of enterprise management, however, a particularly important role in providing appropriate service is played by logistics (Figure 1). The concentration on the problem of appropriate customer service is compliant with the philosophy of logistics management which is constantly searching for support from other spheres of the company's activity in order to provide the right product or service, in the right quantity and quality and at the right place and time, thus simultaneously implementing the principal guidelines of logistics customer service.

One of the most frequently quoted definitions of customer service by Polish theoreticians of logistics issues is the reference of Beier and Rutkowski (2004, pp. 40) to "... the ability of the logistics system of the company to satisfy customer needs in terms of time, reliability, communication and comfort". Therefore, logistics customer service concentrates on the physical distribution of products and services so as to provide them in the right quantity and condition, allowing for gaining benefits from their delivery at a specific place and time (Mesjasz-Lech, 2015, pp. 961-970). Due to customer service the products and services of the company take on the characteristics of space and time availability when, due to appropriate operations of the logistics system, they are able to reach the customer at the time and space required by them and this ability of the logistics system is referred to as 'product availability' (Micu et al., 2013, pp. 147–155). It is often identified with the term of logistics customer service although it is broader since it also relates to aspects such as information flow, flexibility of the logistics system and others (Ritter & Andersen, 2014, pp. 1005-1011).

La Londe (1985, pp. 243) has compiled the three ways of understanding the essence of customer service in logistics, namely:

- customer service as an activity, i.e. actions the company should perform on delivery to satisfy the requirements of the customer;
- customer service as performance levels, i.e. measurable standards (norms) of service attributes, compliant with customer expectations;
- customer service as a management philosophy, i.e. the broadest interpretation of the concept, raised to the level of commitment of the company to offer a higher level of service than competitors.

The three-way mode of perception of logistics customer service should not be treated as options to choose from but it is necessary to combine them. The company striving for success in the market in the management process should adopt customer orientation (Verhoef & Lemon, 2013, pp. 1-15) accordingly formulating its mission while simultaneously monitoring its achievements in the field of standards and determining the course of the service process with distinction of specific tasks.

The cited characteristics of logistics customer service do not cover a wide range of options of interpretation of this concept. Therefore, it is very difficult to clearly determine the definitional approach indicating appropriate criteria of logistics customer service for diverse customer needs. The main task areas of management of logistics customer service include:

- determining the most important purchase decisions and choices made by customers;
- conducting interviews with customers in order to determine the significance of service itself and its individual components;
- conducting group interviews for the same purpose.

Communication with customers on the proper implementation and evaluation of logistics service is therefore the basis for deepening customer needs, learning the reasons for satisfaction or dissatisfaction with customer service, conditions accompanying the service evaluation (Hasan, 2014, pp. 788-796). The objective of the paper is to approach the essence of the selected task of management of logistics customer service, i.e. conducting interviews with customers in order to determine the significance of the service itself and its individual components in commercial freight transport companies in the Silesian Voivodeship.

Research methodology

In order to determine the level of implementation of the selected task of management of logistics customer service in the activities of commercial freight transport companies in the area of the Silesian Voivodeship, the own research was carried out. The applied cognitive method was the survey method within the framework of which the categorized technique of acquiring primary information was used, i.e. the questionnaire.

The survey was conducted among 147 commercial freight transport companies, operating in the area of the Silesian Voivodeship. As a result of the acquisition, processing and analysis of the empirical material obtained in the survey, using the questionnaire, there were presented the conditions

in the field of the scope of logistics customer service in the surveyed commercial freight road transport companies.

Subsequently, while taking into account the whole of the conducted research procedure, on the basis of the collected primary data, an attempt was made to examine the dependence of the areas of logistics customer service occurring in the surveyed commercial freight transport companies of the Silesian Voivodeship on the size of these entities.

Results

The first question of the survey questionnaire referred to conducting interviews with customers by entrepreneurs in order to determine the significance of the service itself and its individual components. The declaration of conducting interviews with customers of all market segments was obtained only from 15 companies. Most entrepreneurs, since 84, discussed the significance of logistics service and its components with selected customers. On the other hand, the technique of interview was not applied at all in 48 entities. The full understanding of the needs associated with the level of logistics service desired by customers and taking into account their point of view was therefore indicated by the smallest number of entrepreneurs. A total lack of perception of the need to recognize the expectations of customers towards individual components of logistics customer service expressed by approximately a third of the surveyed entities is rather disturbing.

As indicated by the analysis of the demographics included in the survey form, among 147 surveyed companies, microenterprises predominated, amounting to 76% of the research population (112 enterprises). The share of small-sized enterprises was also significant, amounting to 16.5% of the total number of respondents (24 enterprises). At the same time, medium and large enterprises, together amounting to 7.5% of the research sample (11 enterprises), recorded a small share in the research.

The continuation of the considerations on the problem of conducting interviews with customers in order to determine the significance of the service itself and its individual components is relating it to the size of the surveyed companies. In connection with the structure of responses given by the respondents, in the research into the involvement of entrepreneurs in conducting interviews with customers in order to determine the significance of the service itself and its individual components, the negative correlation was expected. The conducted analyses confirmed the statistically significant clear correlation at the level of – 0.493. Therefore, it can be concluded

that the entrepreneurs in larger units carry out the research among customers more often and more thoroughly. As much as 40.2% of microenterprises do not make attempts to conduct interviews with customers.

Conclusions

In the light of the previous considerations concerning the problem of the implementation of the selected task of management of logistics customer service, i.e. conducting interviews with customers in order to determine the significance of the service itself and its individual components, it can be concluded that, in the conditions of the operation of commercial freight road transport companies in the area of the Silesian Voivodeship, it remains at the incidental level of development.

The distribution of responses of the respondents, depending on the size of enterprises, usually confirmed that along with an increase in the size of the surveyed entities, they indicated a growing tendency to carry out the measurements in question.

The attempt made to examine the dependence of the scope of logistics customer service in the surveyed commercial freight road transport companies of the Silesian Voivodeship on the size of these entities brought satisfactory result in relation to most of the analyzed phenomena. The analysis of the primary data, obtained from the responses of the respondents to the questions included in the questionnaire, in relation to the size of the surveyed companies, using selected statistical measures, confirmed the statistically important relationships. Due to low values of the obtained statistical measures, the conclusions included in the considerations are of a rather hypothetical nature whereas the generalizations formulated on the basis of the above can be considered as interesting research theses, constituting the contribution to further fundamental research.

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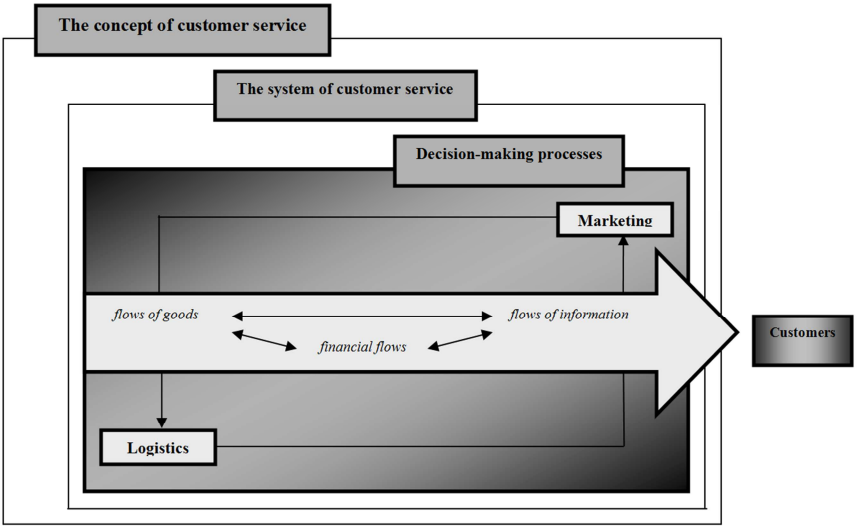
Annex

Figure 1. Multidimensionality of customer service



Source: Own study based on Dembińska-Cyran *et al.* (2004, pp. 37).

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Practices of knowledge management processes: is it often overlooked asset? A comparative study of selected public and private commercial banks in Sri Lanka

JEL Classification: *M10*

Keywords: *Knowledge Management; Knowledge Management Process; Banking Sector*

Abstract

Research background: Knowledge Management (KM) is generally known as the process of generating, capturing, organizing, storing, disseminating and applying knowledge in an organization. Every organization finds knowledge as a very valuable asset, as need for better management of knowledge has become imperative for organizations to remain ahead of competitors, gain popularity among equals and become an integral asset for organizational functionalities. There is a clear indication that banks, both in the public and private sectors, can highly benefit from the adoption of KM. Nevertheless, one general question arises: which sector would be better off with the adoption? Since KM demands key investments of its enablers, a careful knowledge management process should be examined so as to determine a better KM implementation for sustainable success.
Purpose of the article: This study aims to examine the knowledge management processes as practiced by designated public and private banks in Sri Lanka through an empirical analysis to determine whether there are differences in the knowledge management practices of the two sectors.
Methods: The unit for analysis is banks i.e. both in the public and private sectors. The questionnaires were distributed to all the managers in various branches of the banks so as to record a high rate of return. There are two sections in the questionnaire whereby each one addresses each of the two study objectives respectively. A total of 159 responses were gathered through a survey of questionnaires containing 24 questions related to the six constructs of the KM process. SPSS version 23.0 was employed for statisticalanalysis.

Findings & Value added: The result showed that there is a statistically clear variance in the mean of knowledge process scopes and KM practices between both the banking sectors in Sri Lanka. This study contributes to the existing body of knowledge by bridging the gap in researches concerning KM practices in the banking sector. The novelty of this research lies in its attempt at comparing KM processes as practiced in the public and private sector banks in Sri Lanka. The empirically derived findings offer practical recommendations to the banking sector were also enriched with the application of instruments that have been proven to be reliable and valid.

Introduction

Every organization finds knowledge as a very valuable asset, as need for better management of knowledge has become imperative for organizations to remain ahead of competitors, gain popularity among equals and become an integral asset for organizational functionalities. In addition, organizations are geared towards using knowledge assets as strategies and thereby developing tools and systems to achieve the defined goals (Nugulube, 2015, pp. 3-6). In Sri Lankan, banking sector is also categorized according to intense competition among players and this makes the players to mandate employ strategies and establish knowledge assets that are inimitable. The significant role of banking regarding this cannot be overwhelmed in the development of the national economy in as a whole, precisely after private banks were established, alongside the public bank, so as to provide more financial services and opportunities for citizenries. As of 2018, there were 26 licensed commercial banks in Sri Lanka as indicated on the Central Bank of Sri Lanka website (www.cbsl.gov.lk). There is a clear indication that banks, both in the public and private sectors, can highly benefit from the adoption of KM. Nevertheless, one general question arises: which sector would be better off with the adoption? Few are of the opinion that private banks display a much more efficient response to market demands; meanwhile, public banks are seen more as bureaucratic institutions due to their complex operating system that often hinders their potential progression. Nonetheless, there exists a gap regarding KM practices in the discourse of banking sector. Therefore, the objectives of this study are:

1. To determine the extent to which KM processes are being practiced in the public and private banking sectors; and
2. To compare the implementation of KM processes as being practiced in the public and private banking sectors.

Prior studies have acknowledged and discussed some of the important key elements or constituents in the knowledge management process namely: identification, acquisition, storage, sharing and implementation (Bashir, *et al.,* 2014, pp. 89-95); creation, acquisition, sharing, storage and implementation (Gholami *et al*., 2013, pp. 205-216); creation, capture, organization, storage, dissemination and application (Kambiz & Aslam, 2015, pp. 153-168); and knowledge creation process and firm innovation of SECI model that was developed by Nonaka and Takeuchi (1995). In general, KM require a process that involves knowledge generation, usage and applicability. Referencing this literature, researchers have identified six known processes of KM and those processes are defined in the banking setting as a systematic process that creates, acquires, organizes, stores, disseminates and applies knowledge according to its functional capacity, sharing related areas of interest that can further enhance banking performance. As such, KM prompts bankers to not only look out for critical information, but also to creatively manipulate, utilize and re-utilize such information so as to produce new input and bridge the resulting knowledge gap. This can positively affect the sector's productivity, if it is achieved as discussed below.

Knowledge Creation: The capability to learn can be found in the creation of knowledge (Ng Sin Pei, 2008, pp. 1-3). Creation of new knowledge is mandatory as it discovered to be key input for organization's innovative. New technologies, new products or services, new organizational structures and new processes are likely to born out of the new innovative and be credited to KM. Therefore, making a creative through Knowledge should be priotize, while considering knowledge innovatively in organizations. In generating new knowledge, the organization should be certain that, the organizations have a potential or hidden benefits i.e. the source of competitive advantage for the sustainability and continual growth that creates the require wealth (Ng Sin Pei, 2008, pp. 1-3).

Knowledge Acquisition: involves the process of learning and acquiring suitable knowledge from different sources and this could be internal and external sources. This type ok knowledge acquisition is credited to experts, experiences, relevant documents, plans and other sources. Process mapping, interviewing, concept mapping, laddering, observing, educating and training are conventional means of knowledge acquisition (Gholami *et al*., 2013, pp. 205-216).

Knowledge organization: entails document description, indexing and classification (Birger, 2008, pp. 98), which ultimately results in a set of refined knowledge. In knowledge organization, the current pool of knowledge is filtered to determine and cross-reference beneficial

knowledge in different dimensions for a variety of products and services. Contextual knowledge is thus produced to enable it to be implemented, revised and studied for sustainability i.e. in terms of relevance and contemporariness.

Knowledge Storage: knowledge that can be found in an organization's archive is commonly referred to as organizational memory. The best ways to physically store and organize knowledge are through inscribed records, organized information kept in electronic databases, classified human knowledge kept in professional systems, and documented processes and procedures. Non-physical storage of knowledge would be in the form of human brains, or in this context, employees' tacit knowledge. Process applications are useful knowledge repositories with value beyond supporting the development business processes that has been improved upon (Gareth & Svetlana, 2016,pp. 305).

Knowledge dissemination: knowledge sharing motivate organizations such as banks to come together and activate knowledge portals into use, rather than separate silos of knowledge (Lafrenière *et al,* 2013, pp. 2). Dissemination of knowledge should be encouraged among knowledgeable and experienced staff that possess such useful knowledge. The knowledge is disseminated through a common language by using tools that are common tool that every member of staff understands. The required Knowledge may be shared among the employees during seminars, conferences, team-building exercises, written reports, websites, performance appraisals and conventional programs.

Knowledge Application: is best defined as the actual application of knowledge in the process of knowledge management. In addition, when the knowledge more significant, active and pertinent tool for the firm while the firm is trying to create value is known to be application knowledge application. The performance of organization is driven by the ability to apply its knowledge. When knowledge is effectively and efficiently utilized, the operational cost as well as overhead cost of such organization can be reduced and improvement on the organizational efficiency would be recorded (Lafrenière *et al,* 2013, pp. 2).

Research methodology

In this study, the unit for analysis is banks i.e. both in the public and private sectors, whereby in each, a survey on the variable i.e. managers is carried out. One of the questions in the interview asks whether the bank prescribes

to any KM program, and the response is used in determining the participants in the survey. In certain cases, the bank officials were prompted to illustrate the KM initiatives that they have undertaken. The questionnaires were distributed to all the managers in various branches of the banks so as to record a high rate of return. There are two sections in the questionnaire whereby each one addresses each of the two study objectives respectively. A total of 159 responses were gathered from the banks and included in the analysis. The questionnaire included 24 statements that measure the KM processes adapted from Lawson's (2003) KM Assessment Instrument (KMAI). It entails a five-point Likert scale whereby 1 = strongly disagree and goes up the scale to 5 = strongly agree. The survey instrument was distributed among 30 bankers from the private and public sectors to ensure if they are thoroughly appropriate, reliable and comprehensive, especially for the context of Sri Lanka.

Results

SPSS version 23.0 was employed to measure the reliability of the variables i.e. by testing their consistency and stability. The Cronbach's alpha value for Knowledge Creation (KC) was 0.907, Knowledge Capture (KCA) was 0.880, Knowledge Organization (KO) was 0.898, Knowledge Storage (KS) was 0.942, Knowledge Dissemination (KD) was 0.760, and Knowledge Application (KA) was 0.851. All the Cronbach's alpha values had exceeded 0.8, except for knowledge dissemination; hence, the reliability analysis confirms that all the items are accurate and consistent.

The correlation for each dimension was then obtained; for each item, the highest correlation with at least one other item should be between 0.3 and 0.9. All the variables had displayed values within this range, which implies that the constructs correlated adequately.

The descriptive statistics for the items in KC, KCA, KO, KS, KD and KA constructs were presented and the mean values for all the items were above 3. This means that the respondents generally agreed that the knowledge process was being practiced in both the public and private sector banks in Sri Lanka. For each of the items, the highest correlation displayed with at least one other item was between 0.3 and 0.9, signifying that all the items correlated adequately. Based on the results of the Exploratory Factor Analysis (EFA), the Kaiser-Meyer-Olkin (KMO) statistics for KC was 0.835, KCA = 0.754, KO = 0.803, KS = 0.834, KD = 0.661 and KA = 0.793, which are all considered to be good.

Structural equation model was used to assess the confirmatory factors analysis on employee to estimate, so that over all measurement model would be estimated. All the loading items in the measurement model lies between 0.73-0.93, while the composite reliabilities ranges from 0.75-0.94 and values of AVE come between 0.61-0.81 as shown in the table 1, to this end, these result is an indication that, the criteria for convergent validity is met.

The following table shows the scores for all the KM processes i.e. the mean and standard deviation for both the public and private sector banks. The private sector banks recorded an average mean score of 3.16 and standard deviation score of 0.737. Meanwhile, the public sector banks are recorded an average mean score of 3.35 and standard deviation score of 0.733. In the private sector, above average mean factor ratings were recorded by four of the KM processes namely KS, KA, KC and KD in that order, with the lowest score recorded by KO. All the recorded scores for standard deviation are lower than one, signifying a consistent rating of all the elements by the respondents. Meanwhile for the public sector banks, above average mean factor ratings were recorded by three of the KM processes namely KO, KS and KA in that order, with the lowest score recorded by KD. The standard deviation scores for all the processes in the public sector banks were also all below one. Based on the results of the analysis, the comparison of the mean scores for the knowledge process dimensions and the mean scores for all the KM processes between the private and public sector banks showed statistically significant differences.

Conclusions

This study contributes to the existing body of knowledge by bridging the gap in researches concerning KM practices in the banking sector. The novelty of this research lies in its attempt at comparing KM processes as practiced in the public and private sector banks in Sri Lanka. The empirically derived findings used to offer practical recommendations to the banking sector were also enriched with the application of instruments that have been proven to be reliable and valid. The theoretical findings presented in literature concerning the six KM processes had been statistically proven by the factor analysis results.

With regards to the first study objective, it was found that over 70 percent of the respondents have a certain level of knowledge on KM. KM processes that are less systematic and not properly in place are managed by 40

percent of the branch managers. In addition, 60 percent of the managers were not certain if some of their practices were truly a part of the KM processes. Overall, the findings recommended a need for formal establishments that can communicate KM initiatives amongst the banks. With regards to the second study objective, it was found that the respondents have a certain level of knowledge on KM processes and that respondents from the private sector had shown a higher awareness level of formal KM programs in their banks. Based on the mean scores attained, it was indicated that both banking sectors only practiced KM processes moderately. Effective KM practices cannot be achieved without the establishment of a comprehensive KM program and improvement on the implementation of the KM processes. The analysis results indicated a significant difference between the public and private banks' KM processes; the public sector banks showed higher scores on three out of the six KM processes, signifying that they have more responsibility in terms of community service within the community in which they operate. Facilities such as information technology (IT) are better provided by the private sector banks. Most of the banks in both sectors have some form of database, repository and knowledge application use in place.

The recommendations below function as a guide in institutionalizing an appropriate KM Program:

1) Communicate all KM strategies to the employees to ensure alignment between the KM initiatives with the banks' vision, mission and objectives.

2) Knowledge sharing initiatives need to be intertwined to ensure sustainability of the benefits attained from the KM implementation and of the general success of the banks. The role of IT as an enabler of KM must be duly acknowledged to ensure proper implementation of the tasks. Since knowledge sharing is largely dependent on humans, the support of IT infrastructures is highly essential. It is apparent that advances on the knowledge of KM processes is currently lacking in the banking sector.

Additionally, the recommendations are hoped to be beneficial in providing insights as to how the banks can properly organize their KM processes, in such a way that would give them competitive advantage in dealing with global challenges and fulfilling stakeholder expectations.

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Annex

Table 1. Validity Testing

Construct	Items	Factor Loading	Composite Reliability (CR)	Average Variance Extracted (AVE)
Knowledge Creation (KC)	KC4	.914	0.914	0.731
	KC3	.905		
	KC2	.930		
	KC1	.837		
Knowledge Capture (KCA)	KCAP4	.948	0.897	0.691
	KCAP3	.729		
	KCAP2	.955		
	KCAP1	.648		
Knowledge Organisation (KO)	KO4	.740	0.906	0.711
	KO3	.959		
	KO2	.699		
	KO1	.942		
Knowledge Storage (KS)	KS4	.846	0.943	0.806
	KS3	.960		
	KS2	.968		
	KS1	.807		
Knowledge Dissemination (KD)	KD4	.732	0.752	0.656
	KD3	.868		
	KD2	.705		
	KD1	.961		
Knowledge Application (KA)	KAPP4	.887	0.856	0.606
	KAPP3	.728		
	KAPP2	.803		
	KAPP1	.846		

Table 2. Comparison of Mean Scores for Private and Public Sector Banks in Sri Lanka

KN Process	Ranking		Mean		SD		t Value		Significance	
	Private	Public	Private	Public	Private	Public	Private	Public	Private	Public
Knowledge Creation (KC)	3	5	3.25	3.16	0.721	0.704	8.216	8.708	0.000	0.000
Knowledge Capturing (KCA)	5	4	3.11	3.22	0.712	0.622	3.447	2.769	0.000	0.000
Knowledge Organisation (KO)	6	1	2.86	3.67	0.73	0.801	2.822	2.897	0.000	0.000
Knowledge Storage (KS)	1	2	3.31	3.58	0.701	0.784	3.422	5.586	0.000	0.000
Knowledge Dissemination (KD)	4	6	3.18	3.1	0.78	0.721	7.273	6.433	0.000	0.000
Knowledge Application (KA)	2	3	3.27	3.41	0.775	0.767	2.368	3.253	0.000	0.000
Average Mean Score			3.16	3.35	0.737	0.733				

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Digitalization of supply chains: new paradigm

JEL Classification: *M11; O33; L81; L86.*

Keywords: *Digital technologies (DT); Digital Supply Chain; Industry 4.0.*

Abstract

Research background: Already today, there is a massive introduction of cyber-physical systems into production and breakthroughs in unprecedented industries - artificial intelligence, robotics, the IoT, 3D printing, nanotechnologies, autonomous machines, drones, virtual assistants, blockchaine technology, quantum computers etc. In varying degrees, these changes affect the whole society. In the field of business, and in particular in the theory and practice of supply chain management, today we can see the use of the terms “Digital Supply Chain”, “Supply Chain 4.0”, “Digital logistics”, “Smart logistics”. This demonstrates the relevance of the implementation of digital technologies in the practical activities of manufacturing, trading, and logistics companies, interconnected by networking in the process of moving products or services to final consumers. In turn, this causes fundamental changes in the structure of supply chains, their business processes and behaviors, making existing approaches to management obsolete. Therefore, modern companies and their supply chains should be ready to functioning in the digital environment.

Purpose of the article: The purpose of the article is to conduct a thorough study of the threats and opportunities for companies to transition to a digital format of doing

business in supply chains and the influence of digital technologies, where they can have the greatest effect on each parts in the supply chain.
Methods Theoretical and empirical research methods are used in the article.
Findings & Value added: As the result of a thorough study of the paths and opportunities of digitalization of supply chains as a new paradigm, this study will be valuable to both scientists and practitioners. Scientists will be able to understand the conceptual transformation of supply chains under the influence of digital technology. Practitioners will learn how to successfully use digital technology to create competitive advantages, reduce costs, accelerate innovation and build various development scenarios.

Introduction

Over the recent years business environment has undergone significant changes: production time duration has reduced considerably, product life cycle has reduced, product variety and complexity has increased, mass production is being displaced with mass customization of products and services. Particularly noticeable are the changes in the fields where information technologies, quick flow of information and new forms of interaction with clients are of critical importance. In this context a global trend in the development of global industry is its moving towards the 'Industry 4.0' level and penetration of information technologies into all the fields and aspects of human activity.

In the field of business, and, in particular, in the theory and practice of supply chain management active dissemination of the 'Industry 4.0' and 'digital economy' ideas can be traced. Already now one may observe the appearance and the use of the terms 'digital supply chain', 'supply chain 4.0', 'digital logistics', 'smart logistics'.

Hence, modern companies and their supply chains must get ready for such changes, through their conscious selection and adjustment of their logistic systems to the functioning in the digital environment.

The purpose of the article is to conduct a thorough study of the threats and opportunities for companies to transition to a digital format of doing business in supply chains and identifying supply chain development drivers in Industry 4.0 and the influence of DT, where they can have the greatest effect.

Application of a set of general scientific and empirical methods of research will contribute to the achievement of the goals set.

Research methodology provides specific description of the research methodology based on 3 consistent steps.

The results include a detailed elaboration of each step envisaged by the research methodology.

Conclusions include the results of the study in accordance with the proposed research methodology, implications and recommendations for practice.

Research methodology

The following research methodology is suggested in the paper:

Step one: Identification of supply chain development drivers in the conditions of 'Industry 4.0' on the basis of critical analysis of sources and systematization of data of the recent researches and publications in the field of topical trends and key market requirements to supply chain development.

Step two: Determination of the effect of DT on some aspects of supply chain functioning in the cross-section of strategic and operational changes on the basis of data systematization and comparative analysis of the recent researches and publications.

Step three: Study of the threats and opportunities of company transition to the digital format of doing business in supply chains.

The subject to further research is find out the real current situation regarding the level of business representatives' awareness about the effects of digital technology implementation in the activity of enterprises (using a questionnaire survey of managers of Ukrainian enterprises).

The final step is contrasting the results of the our survey made with the results of other researches and with the conclusions drawn in the course of performance of steps 1-3 for the sake of confirming or refuting the tendenses found out during research.

Results

The notion of "digitalization" is closely related to the concept of digital economy and Industry 4.0 (Vasin *et al.* , 2018, pp. 63-76). The potential of digitalisation seems enormous and affects a large number of industries, from agriculture and energy, logistics, IT and communications, to mechanical engineering and vehicle manufacturing.

At the same time there should be mentioned the absence of a unique, sustainable understanding and interpretation of both 'Industry 4.0', 'digital economy' concepts, and related terms in the field of digital supply management like 'digital supply chain', 'supply chain 4.0', 'digital logistics',

'smart logistic'. Such situation makes its considerably more complicated to identify the key drivers on the way to the development of modern supply chains.

1. Identification of supply chain development drivers in the conditions of 'Industry 4.0'

In table 1 the core trends determining supply chain development in the nearest future according to the versions of the leading consulting and logistic companies of the world by the key spheres of influence are provided.

The above trends allow to draw a rather clear picture of the requirements to the SCM model in the nearest future. Among them of considerable importance along with the traditional focusing on the capacity of internal process and supply chain structure improvement and increasing role of DT therein are the requirements of the surrounding environment, in particular, clients as to environmental friendliness, social responsibility, sustainable development as well as digitalization of market offer and purchasing process format.

Critical analysis of the above trends, as well as due account of the special features of the modern client's portrait allow to point out key requirements to SCM in the times of digital transformations, which constitute the main consequence of the Industry 4.0 era, as well as the influence of innovative technologies on digital economy (Figure 1).

Analysis of the core trends and requirements to supply chain development allow us to identify the key supply chain development drivers. Their composition is represented in Figure 2.

Thus, in order to achieve economic growth in the conditions of increasing digitalization, supply chains must be both efficient, flexible, and responsible.

2. Determination of the effect of DT in the cross-section of strategic and operational changes in supply chains.

Figure 1 visually reflects the opinion of the authors about the role of innovative technologies of digital economy as an integral part of SCM, the effect of which, in fact, penetrates all the fields of activity and decision-making in supply chains. At the same time, it would be expedient to split this influence by the intensity of integration, being built into the selected business model of the supply chain.

Hence, innovative technologies of digital economy may play either supporting or key role. In the former case one may speak about preservation of the classical approach to SCM, while in the latter – about complete transformation of SCM and transition to the digital model of management.

While the classical model of SCM is conceptually and methodologically well-developed, the concept of the digital model of SCM is just under de-

velopment. It is premature to state that there is a deep-designed universal paradigm of transition from classical to the digital model of management (Bruskin *et al*., 2017, pp. 264-274).Therefore, at the given stage of SCM development, of interest is the study of innovative technologies of digital economy, that play a supporting role in SCM and identification of the fields of activity that will enable to improve classical models of SCM.

On the basis of analysis of the latest researches and publications dedicated to the review of global DT, we consider it to be expedient to systematize available information and to determine the basic composition of DT fit for use at two levels of supply chain management: strategic and operational, with reflection of the key business effects and respective strategic or operational changes (Table 2).

3. Study of the threats and opportunities of company transition to the digital format of doing business in supply chains.

According to International Data Group's 2018 Digital Business Survey (Solis, 2018) despite the fact that connected devices are flourishing as predicted, for most enterprises, the transition to a digital-first business model has been more cautious and methodical.

In our opinion the most important problem of digital transformation is that - many people are still fuzzy on exactly what it means and how to implement it.

In this context we share the opinion of (Vasin *et al*., 2018, pp. 63-76) concerning dependence of the success of any introduction of DT on education, personnel training, development and management of innovative human resources, management of talents.

Conclusions

The following results have been obtained in the article:

1. Supply chain development drivers in the conditions of Industry 4.0 have been identified.
2. The effect of basic supply chain innovative technologies on the strategic and operational level of the classical model of management, including, SCM, has been identified.
3. Key threats and opportunities of company transition to the digital format of doing business have been determined.

We consider that this study will be valuable to both scientists and practitioners. Scientists will be able to understand the conceptual transformation of supply chains under the influence of digital technology.

Practitioners will learn how to successfully use digital technology to create competitive advantages and build various development scenarios.

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Annex

Table 1. Trends determining supply chain development in the nearest future in the version of the leading consulting and logistic companies

Key areas of supply chain trends by the version of:		
Logistics Bureau	**Cerasis**	**BVL International**
1. Increasing dependency on IT and software applications. 2. Priority of Agile decisions. 3. Increasing Customer expectations 4. The key value of supply chain knowledge 5. Coopetition and partnership	Data-visualization Increasing Perfect Order Deliveries Sustainable Practices Dominating Service Supply Chains Standard Certification Process of Supply Chain Management Increasing the Role of Social Media in Supply Chain Management Flexible Processes and Elastic Systems Omnichannel Supply Chains Focus on Integrating the Long Tail of Supply Chains More 3PLs Attracting New Talent Digital Supply Chains	1. Increasing Customer expectations 2. Networked (digital) economy 3. Cost pressure: Customers continue to expect low costs. Although other require 4. Globalization 5. Talent shortfalls 6. Volatility 7. Sustainability pressure 8. Increased risk and disruption 9. New technology

Source: the study based on **(**6 Supply Chain Trends That Could Truly Shake You Up, 2018; The Top Supply Chain Trends that Will Impact Supply Chain Management in 2018, 2018).

Table 2. Basic supply chain innovative technologies, their effect on the strategic and operational level of the classical model of management including SCM

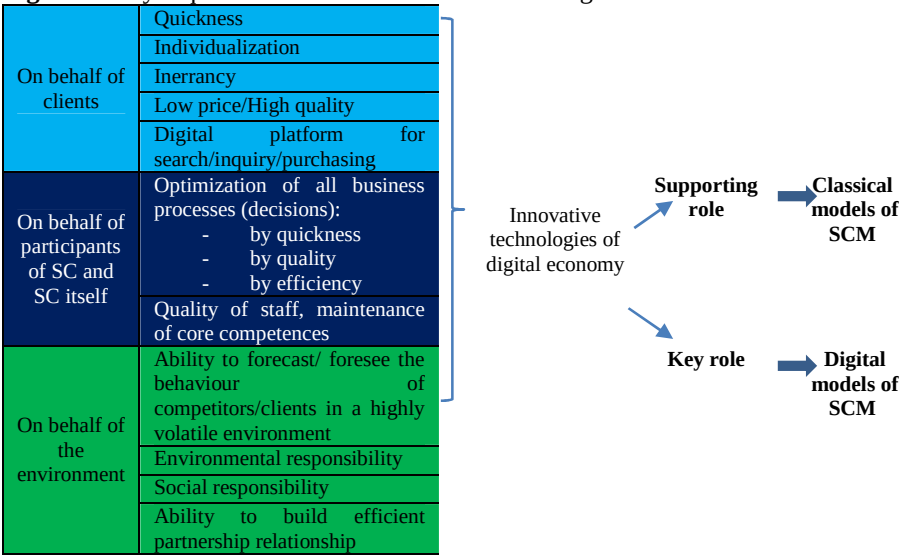
Supply Chain Innovative technologies*	**Level of management changes**	**Business effects**
Artificial intelligence	Strategic (change corporate system of information management) Operational (change different areas of operational planning)	Increasing prognosis reliability Increasing business process efficiency Reducing planning costs Reducing risks
Advanced analytics, Big Data analyses	Strategic (change strategic planning, corporate system of information management) Operational (change different areas of operational planning, especially logistics, purchasing, distribution)	Optimization of business processes by quickness, quality and efficiency Reducing planning costs
Internet of Things (IoT)	Strategic (change corporate system of information management) Operational (change different areas of operational planning, especially logistics, purchasing, distribution and production, also asset management through installation of IoT-equipment)	Optimization of business processes by quickness, quality and efficiency Increasing Perfect Order Deliveries Reducing costs
Intelligent things, Smart objects	Operational (change system of asset, logistics, product and service management)	Optimization of business processes by quickness, quality and efficiency Reducing planning costs Increasing Perfect Order Deliveries
Conversational systems	Operational (change system of communications and transactions with clients)	Increasing efficiency of communications with external environment

Table 2. Continued

Supply Chain Innovative technologies*	Level of management changes	Business effects
Robotic process automation	Operational (production process automation)	Optimization of production processes by quickness, quality and efficiency
Immersive technologies	Strategic (change goals, products) Operational (enhanced repair and maintenance capabilities in manufacturing, logistics and warehousing, obtaining of exhaustive information about freight via scanning)	Optimization of production, warehousing, transportation processes by quickness, quality and efficiency Increasing Perfect Order Deliveries
Blockchain	Strategic (change strategic planning, corporate system of information management, financial system, control system of network and financial transactions) Operational (change operating planning, financial basis of transaction with clients, format of contracts or traceability and authentication)	Optimization of through business processes along the supply chain by quickness, quality and efficiency Reducing the costs of economic agents' contracting, allowing managing the companies' operational risks and controlling the costs of the network and financial transactions
Predictive Maintenance Technology	Strategic (change corporate system of information management) Operational (enhanced repair and maintenance capabilities in manufacturing)	Optimization of production business processes by quickness, quality and efficiency
SMAC (social, mobile, analytics and cloud)	Strategic (change corporate system of information management) Strategic (change different areas of operational information management, relationship with clients)	Optimization of business processes by quickness, quality and efficiency Reducing costs
Cloud Computing	Strategic (change corporate system of information management) Operational (change different areas of operational information management)	Business process acceleration Reducing informational costs
Smart electronic systems	Strategic (change corporate system of information management) Operational (change different areas of operational information management)	Business process acceleration Reducing informational costs
3D Printing	Strategic (change corporate manufacturing management, goals) Operational (change system of production)	Production diversification Reducing producing costs
Drones	Operational (change system of distribution)	Increasing Perfect Order Deliveries Reducing delivery costs
Wireless communication (RFID, GSM, GPS, etc)	Operational (change system of distribution, logistics and assets management)	Increasing Perfect Order Deliveries Reducing logistics costs
Remote and mobile assets	Operational (change system of assets, manufacturing and inventory management)	Reducing inventory costs
Electronic currency	Strategic (change corporate system of information management, financial system) Operational (change financial basis of transaction with clients, format of contracts or traceability and authentication)	Reducing the costs of economic agents' contracting Optimization of financial transactions

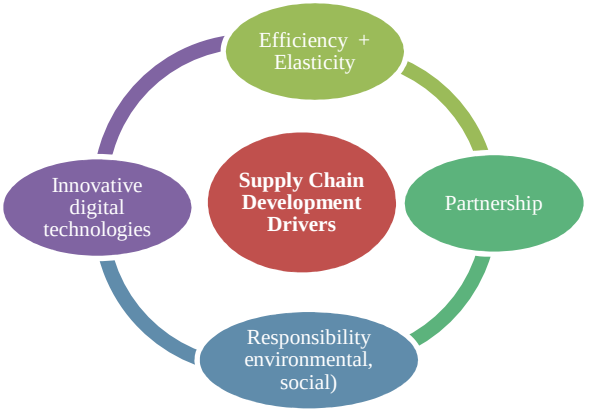
Source: the study based on (Adamczewski, 2017, pp.11-22; Corcoran & Datta, 2016, pp. 73-74; Almada-Lobo, 2015, pp. 16-21; Vlasov *et al.*, 2018; Cook & Das, 2005).

Figure 1. Key requirements to SCM in the times of digital transformations



Source: own development.

Figure 2. Supply Chain Development Drivers



Source: own development.

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Intellectual capital perception among Latvian financial experts

JEL Classification: *O34; C83*

Keywords: *intellectual capital; concept; survey; Latvia*

Abstract

Research background: Intellectual capital has become one of most important resources which provide sustainable competitive advantage for a company. Despite it there is no unique approach to the concept of intellectual capital. Different concepts are used for the intellectual capital meaning in scientific literature and legislation, for example, intangible assets, intangibles, intellectual property etc. Different interpretation of the concept of intellectual capital impedes it perception.
Purpose of the article: is to reflect the results of the authors' conducted survey among Latvian business sector representatives aimed to investigate the perception of the Intellectual capital and its elements.
Methodology/methods: Expert survey among accounting managers (and other related position holders) representing different Latvian companies – was conducted, using the authors' own developed questionnaire. Respondents were offered to evaluate pre-determined statements regarding the core of Intellectual capital and its elements. Analysis was performed by calculating "frequencies" in SPSS environment.
Findings & Value added: The survey results showed that financial experts' awareness of intellectual capital is quite limited. They take into consideration only

one component of intellectual capital: knowledge and experience of employees. Respondents do not link the intellectual capital with a value. Thus, intellectual capital is not to be considered as an asset that can create value. One of the reasons could be difficulties in evaluating this asset, as well as problems in calculating the return on the asset. This limited view, probably, has been caused by the lack of consistency between definitions of the concept provided by different researchers, as well as by inconsistency in legislation, accountancy and financial standards.

Introduction

During last three decades, the issues regarding the intellectual capital measuring and managing have been discussed very frequently in the academic environment (Guthrie *et al.*, 2012, pp.68-82; Lentjušenkova&Lapina, 2016, pp. 610-631; Ahmed&Anifowose, 2017, pp. 373-399; Jordao&Novas, 2017, pp.667-692 and others). Today, intellectual capital is often mentioned as a unique resource for companies that can provide a certain competitive advantage. Intellectual capital has been acknowledged at the European Union level (the European Commission has funded a number of research projects), and at the level of various international organizations (such as the Organisation for Economic Co-operation and Development (OECD)), which call for greater attention to the use of this resource in the operation of enterprises. However, in the business environment, this resource is associated with difficulties, which reduce the possibilities for its use, for example, copyright protection mechanisms, knowledge accumulation, problems in building storage and exchange systems, staff turnover, lack of financial resources needed for the purchase of the required amount of intellectual capital, problems of recording these resources in accounting etc.

The goal of the current paper is to reflect the results of the authors' conducted survey among Latvian business sector representatives aimed to investigate the perception of the Intellectual capital and its elements.

The research hypotheses were stated, as follows:

H1: *There is no in-depth understanding of the concept of intellectual capital among financial experts in Latvia.*

H2: *Financial experts understand the intellectual capital as a knowledge and experience of company's employees.*

To achieve the research goal and to test the hypothesis, experts – mainly accounting managers representing different Latvian companies – were surveyed, using the authors' own developed questionnaire.

Respondents were offered to use Likert-type 5-point scale for grading, where "1" indicated "absolutely disagree" and "5" – absolutely agree.

Initial analysis was performed by calculating "frequencies" in SPSS environment. Procedure of ranking was made, based on the ratings "4"+"5" frequency.

Concept of intellectual capital

Despite the fact that the concept and nature of intellectual capital have been studied at large, there is a lack of a common understanding of its role in the company's sustainable development along with the changing environment and situation in the world economy and in each separate country. In the scientific literature, intellectual capital is interpreted in different ways: as a resource, as an intangible asset, or as knowledge. This concept has been frequently studied and is still being studied in the context of changes in the company's financial performance or when trying to find out how intellectual capital affects the profit margins and the company's value.

Apart from the concept of intellectual capital, different authors distinguish a variety of intellectual capital components or form its structure in different ways. Intellectual capital is traditionally divided into three groups/components: human capital (in the sense of the company's human capital), organizational capital and relational capital . Each component of intellectual capital consists of several elements which are defined differently by different researchers. In general, common trends can be observed in the distribution of these elements, whereas the main differences are in the element name. In previous studies conducted by the authors a four-component structure of intellectual capital was offered. At organizational level, the authors offered to structure intellectual capital into four components, which would allow the organization to easily enter them in the accounts, use them and analyse their changes: human capital, business processes, technologies and intangible assets (Lentjušenkova&Lapina, 2016, pp. 610 – 631.). Each of these components is formed from a variety of elements: knowledge, intellectual property, computer networks, brand, qualification etc.

In previous studies conducted by authors it was found, that one of the factors influenced intellectual capital development is lack of unique understanding of the concept of intellectual capital. There are different concepts

using in scientific literature, legislation and accountancy standards (Lentjušenkova *et al.*, 2018, pp. 215–223.). This factor plays an important role in intellectual capital management and development at enterprise level.

Research methodology

To investigate the perception of the concept of Intellectual capital and involving elements, the authors developed a questionnaire that was disseminated between experts in a financial field – mainly, among accounting managers.

Respondents were offered to evaluate several statements regarding the essence of Intellectual capital, as well as to express their viewpoint about pre-determined IC elements. The questionnaire design is presented in the Table 2.

Statements included into the questionnaire and their labels used for analysis are presented in the Table 2 and Table 3.

Respondents used 5-point scale to express their attitude ("1" – absolutely disagree, "5" absolutely agree).

The authors received 29 completed questionnaires considered as appropriate for data processing. Frequency analysis was performed to analyse the data, as well as ranking procedure was used to determine the most common understanding of the concept of Intellectual capital, and to identify assets' items and business activities assigned to the Intellectual capital from the viewpoint of respondents.

Research results

Table 5 and Table 6 present the results of frequency analysis.

The authors conclude that financial experts do not associate intellectual capital with value. Most frequently, respondents link Intellectual capital with „knowledge and experience of company's employees" (86.2% of respondents). The least popular definition is „Company's long-term intangible investments".

The authors conclude that the majority of entrepreneurs do not have an in-depth understanding of the nature of intellectual capital – what they understand by intellectual capital is only one element of intellectual capital.

Calculating the frequencies of "4" and "5" rates, the items perceived by respondents (respondents agree/absolutely agree) as Intellectual capital elements are:

1. Staff competence (93.1% of respondents)
2. Business processes (69% of respondents)

Regarding some elements (Brand, Marketing plans, Data bases, Customer loyalty programmes, Patents), the opinions were quite different – for instance, many respondents have no clear opinion. But most of respondents recognize the importance of "Licences", "Patents", "Brand". It could be explained with Latvian accountancy standards, where licences, patents and brands are treated as intellectual property and are included in annual financial report.

The survey results also show a certain inconsistency in the responses. Most of respondents understand the intellectual capital as a „knowledge and experience of company's employees". But at the same time as one of important elements of the intellectual capital is considered the business processes. This approves the hypothesis of the research.

Conclusions

The given paper presents the results of the authors' conducted survey on investigation the perception of Intellectual capital and its elements among financial experts, mainly accounting managers working in companies representing different business sectors of Latvian economy.

The survey results showed that what financial experts often understand by intellectual capital is only one component of intellectual capital. The respondents do not link the intellectual capital with a value. This limited understanding can create stereotypes about the role of intellectual capital in the company's activities, limiting the company's development potential. There is a risk that the company might not pay enough attention to the intellectual capital in its possession because intellectual capital is not considered as an asset that can create value. One of the reasons could be difficulties in evaluating this asset, as well as problems in calculating the return on the asset.

The survey results also show a certain inconsistency in the responses. Most of respondents understands the intellectual capital as one element of the intellectual capital, but as most important elements of intellectual capital choose many others elements too.

The both hypothesis are approved during the study. The results of current study continue and approve results gained from previous studies conducted by authors. These results could be used for following studies regarding intellectual capital management and development at enterprise.

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Annex

Table1. The concept of intellectual capital in scientific literature 2000-2017 (some examples)

Author/Authors	Definition
Petty&Guthrie, 2000, pp. 155-176	Intellectual capital is an indicator that has the ability to generate future earnings or financial capital together with an organization
Jurczak, 2008, pp. 37-45	Intellectual capital is all connected with each other: knowledge resources that the organization disposes in creating value needed to gaining competitive advantage in long term.
Kianto *et al.*, 2013, pp. 12-22.	Intellectual capital comprises the valuable knowledge-based resources and the management activities related to them
Lentjušenkova&Lapina, 2016, pp. 610 – 631.	Intellectual capital is the organization's asset that includes the organization's human capital, business processes (procedures and their descriptions), technologies, and intangible assets that can be transformed into tangible and intangible value.
Jordao&Novas, 2017, pp.667-692	Intellectual capital is formed of intangible assets, but also of the relationships between all types of organisational resources, whether material or immaterial

Source: designed by the authors.

Table 2. Questionnaire design

Section I	Respondent profile	Comments
Q1	Experience in finance/accounting/related spheres	Closed: 3 alternatives
Q2	Business sector	Closed: 5 alternatives
Q3	Company's size	Closed: 4 alternatives
Q4	Company's operating age	Closed: 4 alternatives
Section II	**General questions regarding IC**	**Comments**
Block A	Core of Intellectual capital	5 statements A1-A5
Block B	Elements of Intellectual capital	9 elements B1-B9

Source: designed by the authors.

Table 3. Block A statements (question: What of the statements is aligned with your understanding of Intellectual capital?)

No.	Statement	Label
A1	Knowledge and experience of company's employees	Staff competence
A2	The company's non-financial and intangible resources that are completely or partly controlled by the company and that rise the company value	Resources
A3	Company's long-term intangible investments	Intangibles
A4	Intellectual capital is the organization's asset that can be transformed into tangible and intangible value	Value
A5	Company's human capital, structural capital and relational capital	Capital

Source: designed by the authors.

Table 4. Block B statements (question: What elements Intellectual capital involves?)

No.	Element	Label
B1	Knowledge and experience of company's employees	Staff competence
B2	Technologies and software	Technology
B3	Licenses	Licenses
B4	Patents	Patents
B5	Brand	Brand
B6	Schemes and description of business management process (incl. quality management system)	Business processes
B7	Data bases (customers, partners, staff and etc.	Data bases
B8	Marketing plans	Marketing plans
B9	Customer loyalty programmes	Customer loyalty programmes

Source: designed by the authors.

Table 5. Frequency analysis results (section II, block A data)

	1	2	3	4	5
Staff competence	-	3.4%	10.3%	31%	55.2%
Resources	-	6.9%	24.1%	51.7%	17.2%
Intangibles	-	13.8%	37.9%	37.9%	10.3%
Value	-	13.8%	24.1%	44.8%	17.2%
Capital	-	3.4%	27.6%	44.8%	24.1%

Source: authors' estimation.

Table 6. Frequency analysis results (section II, block B data)

	1	2	3	4	5
Staff competence	-	3.4%	3.4%	41.4%	51.7%
Technology	-	3.4%	34.5%	27.6%	31%
Licenses	-	17.2%	31%	27.6%	20.7%
Patents	-	20.7%	20.7%	27.6%	31%
Brand	-	6.9%	37.9%	27.6%	27.6%
Business processes	-	3.4%	27.6%	41.4%	27.6%
Data bases	-	6.9%	34.5%	41.4%	17.2%
Marketing plans	-	20.7%	27.6%	37.9%	13.8%
Customer loyalty programmes	-	17.2%	31%	41.4%	10.3%

Source: authors' estimation.

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Marketing metrics in customer experience management

JEL Classification: *M31*

Keywords: *customer experience, marketing metrics, customer journey, experiential marketing*

Abstract

Research background: Customer experience management is a new marketing direction that will allow companies to differentiate themselves and gain a competitive advantage. The core ability of companies adopting the customer experience management approach is to be able to understand customers' perceptions of their business that is often significantly different from the conventional company's view. It is important for companies to be able to understand customer needs and manage customer experience.
Purpose of the article: The aim of this article is to analyze marketing metrics and performance measures, including measuring marketing performance in new ways and evaluating marketing accountability and also in detail determine which of them are usable in analyzing and managing customer experience. Another goal is create and present an organizing framework to help retailers and researchers understand and develop customer experience management strategies.
Methods: Extensive secondary research of the several hundreds of research articles from years 2010–2018 indexed in Web of Science database. Content analyze of these articles.
Findings & Value added: This article finds metrics to help marketers' initiatives in increasing firm performance based on their marketing effectiveness and their ability to develop marketing strategies and determines the metrics to use for managing customer experience.

Introduction

Customer experience is increasingly perceived as an important marketing concept leading to differentiation and as an effective solution for building a competitive advantage in an open global market. Customer experience management is a new marketing direction that will allow companies to differentiate themselves and gain a competitive advantage Bolton et. al. (2014). According to Meyer, Schwager (2007) Customer experience (CX) encompasses every aspect of a company's offering, for example, advertising, packaging, features of product and services, ease of use, reliability or the quality of customer care. Understanding customer experience and the customer journey over time is critical for companies (Lemon & Verhoef, 2016). The need to understand the relationships among customer metrics and profitability has never been more critical and marketing practitioners and scholars are under increased pressure to be more accountable for and to show how marketing expenditure adds to shareholder value (Doyle, 2000). In recent years, there has been a significant increase in the number and type of marketing metrics that managers can use to measure marketing effectiveness and to develop marketing strategies with the goal of increasing firm performance.

Research methodology

Extensive secondary research based on systematic search and comparison of information of the research articles from years 2010–2018 indexed in Web of Science database. Contextual and sematic analysis of these scientific articles. Data analysis from Amadeus database and analysis KPMG study on customer experience in United Kingdom.

Results

We first need to clarify the ways marketing activities build shareholder value. The firm should have a business model that tracks how marketing expenditures influence what customers know, believe, and feel, and ultimately how they behave. These intermediate outcomes are usually measured by nonfinancial measures such as attitudes and behavioral intentions. The problem is how nonfinancial measures of marketing effectiveness drive the financial performance measures such as sales, profits, and shareholder value in both the short and the long run. Long term assets can be build by

advertising, service improvements, new product launches. Short terms assets can improve for example price promotions. However, this short marketing action can destroy long-term profitability (Rust et al. 2004). Metrics wchich is discussed in literature can be categorizing to seven categories – (1) brand value metrics, (2) customer value metrics, (3) word of mouth and referral value metrics, (4) retention and acquisition metrics, (5) cross-buying and up-buying metrics, (6) multi-channel shopping metrics and (7) product return metrics (Petersen et al. 2009). According to Rust et al. (2004) can be used conceptual framework for evaluate marketing productivity. One of the framework element is customer impact which has five dimensions – (1) customer awareness, (2) customer associations, (3) customer attitudes, (4) customer attachment and (5) customer experience. Other parts of marketing framework are strategies and tactis, marketing assets, market impact, financial impact, impact on the value of the firm. According to Gupta and Zeithaml (2006) exist two type of metrics – observable and unobservable. Observable metrics are acquisition, retention, cross-selling, customer lifetime value, customer equity. Unobsevable are customer satisfaction, service quality, loyalty and intention to purchase. Farris et al. (2006) categorizes major metrics to 9 categories - (1) share of hearts, minds and markets, (2) margins and profits, (3) product and portfolio management, (4) customer profitability, (5) sales force and channel management, (6) pricing strategy, (7) promotion, (8) advertising media and web metrics and (9) marketing and finance. The following figure shows metrics, which can be used to measure the marketing effectiveness and overall fitness of your business. According to Cirillo and Bloem (2017) three key metrics that are most often used are NPS (Net Promoter Score), CSAT (Customer Satisfaction) and CES (Customer Effort Score). NPS stands for Net Promoter Score. It's a customer satisfaction benchmark that measures how likely your customers are to recommend you to a friend. Customer satisfaction (CSAT) is a metric used to quantify the degree to which a customer is happy with a product, service, or experience. This metric is usually calculated by deploying a customer satisfaction survey that asks on a five or seven-point scale how a customer feels about a support interaction, purchase, or overall customer experience, with answers between "highly unsatisfied" and "highly satisfied" to choose from. Customer Effort Score (CES) is a type of customer satisfaction metric that measures the ease of an experience with a company by asking customers, on a five-point scale of "Very Difficult" to "Very Easy," how much effort was required on the part of the customer to use the product or service to evaluate how likely they are to continue using and paying for it. These authors recommend ROI to measure the effects of investment in customer experience. It is always necessary to

focus on a certain measure and evaluate its ROI. Focus on 3-5 elements within two big "returns" areas – revenue growth (repeat purchases, better cross-sells) and costs savings (increased productivity, fewer complaints).

$$ROI = \frac{gain\ from\ CX - cost\ CX}{cost\ CX}$$

Table 1 lists the UK companies I selected from the KPMG Top 100 list of companies that manage customer experience and their standigs. In this article, we wondered if it is possible to find a correlation between CX ranking and company financial results. These 9 companies were divided into three categories: retail, hotels and food. The subject of our investigation is operating revenue and EBITDA to see if these indicators showed rising values if the company has better standing in CX ranking. The following tables shows standing at CX rankings and financial performance of selected company.

As can be seen from the Tables 2 - 4 in some companies that are good at CX, this is reflected in the financial results. Only Amazon has seen growth in both, operating revenue and EBITDA. Apple has seen operating revenue growth, but EBITDA has a downward trend. Conversely, Tesco, which has plummeted in the CX rankings, continues to increase EBITDA despite the decline in operating revenue. Other companies are either stagnating financial indicators or deteriorating financial ratios, but this may also be related to sector-specific developments.

Conclusions

Customer experience is an important part of company management. There are detailed models of how to measure customer experience, but few can accurately determine the company's financial benefits. One way to measure the financial benefits of customer experience management is ROI. But not the ROI that is used in corporate financial management, but to use ROI for individual projects that are related to managing customer experience and calculating the return on these individual actions. As a result, there is no direct link between the location of the company in the CX ranking and the value of operating revenue or EBITDA. To prove correlation between CX standings and financial perforamance, more research would be needed on more companies, in more sectors, and with respect to sector-specific developments. However according to research which made Gupta and Zeithaml (2006) improvement in customer satisfaction has a significant and positive

impact on firms´ financial performance. The link between satisfaction and profitability is asymmetric and nonlinear. The strength of the satisfaction profitability link caries across industries as well as across firms within an industy. There is a strong positive relationship between customer satisfaction and customer retention. So there are still many opportunities for further research in this area.

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Annex

Table 1. Standing in CX ranking

Company	Standings
Ocado	6
Apple store	11
Amazon	14
Intercontinental	15
Samsung store	28
Novotel	32
Marriot	35
Aldi	56
Tesco	98

Source: Conway & Knight (2018).

Table 2. Retail company

	Standing in CX ranking	th EUR	2015	2016	2017
APPLE RETAIL UK LIMITED	**11**	Operating revenue	1 367 955	1 221 597	1 409 551
		EBITDA	69 667	43 772	64 438
AMAZON UK SERVICES LTD.	**14**	Operating revenue	1 288 285	1 706 255	2 239 372
		EBITDA	125 627	109 517	234 951
SAMSUNG ELECTRONICS (UK) LIMITED	**28**	Operating revenue	3 666 442	3 531 770	3 767 534
		EBITDA	99 355	96 954	101 835

Source: own construction based on Amadeus database.

Table 3. Food company

		th. EUR	2015	2016	2017
OCADO RETAIL LIMITED	**6**	Operating revenue	1 485 564	1 384 882	1 531 780
		EBITDA	n.a.	n.a.	n.a.
ALDI STORES LIMITED	**56**	Operating revenue	10 487 965	10 205 243	11 470 136
		EBITDA	520 339	421 653	443 100
TESCO PLC	**98**	Operating revenue	69 278 899	65 770 993	64 899 488
		EBITDA	3 286 635	3 107 356	4 063 975

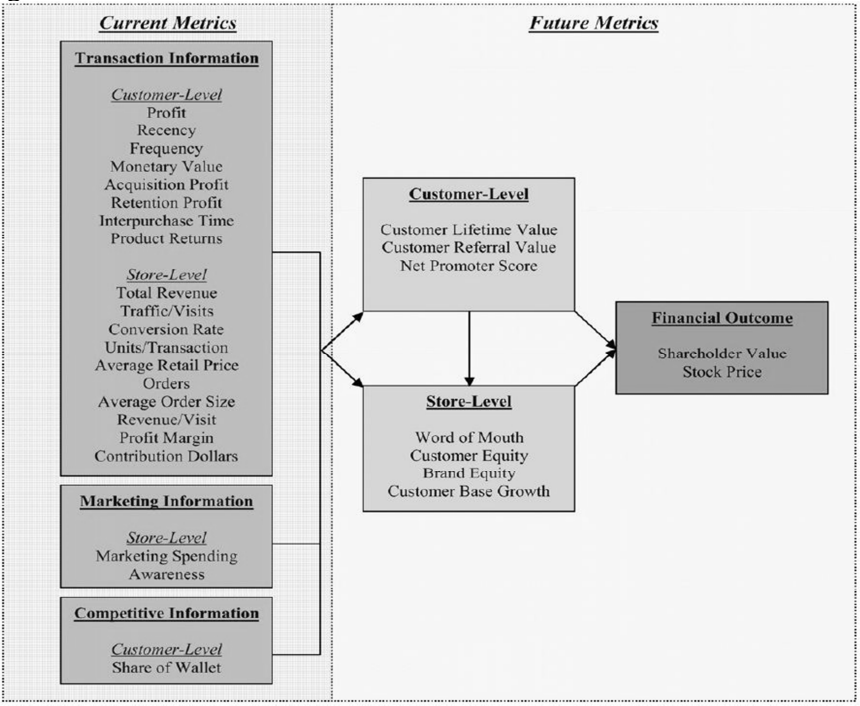
Source: own construction based on Amadeus database.

Table 4. Hotel company

		th. EUR	2015	2016	2017
INTERCONTINENTAL HOTELS	**15**	Operating revenue	166 172	146 491	163 400
		EBITDA	13 196	14 256	15 206
ACCOR UK	**32**	Operating revenue	364 912	332 708	305 154
		EBITDA	70 563	58 688	30 576
MARRIOTT HOTELS LIMITED	**35**	Operating revenue	283 401	237 877	230 505
		EBITDA	1 734	1 108	2 842

Source: own construction based on Amadeus database.

Figure 1. Metrics of CX



Source: Petersen *et al.* (2009).

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Becoming like social enterprise: the determinants of NGOs' marketization

JEL Classification: *G23; L31; L33*

Keywords: *marketization, NGOs, social enterprises, business-like approach*

Abstract

Research background: NGOs face an increasing expectation to be more business-like. The changes related to this approach are an essential condition for their survival and significant reason of development of their new form as social enterprises. On the other hand, there is no lack of critical opinions mainly related to mission volatility. Currently, there is a discussion in the literature on factors that may affect the NGOs maketization, however, they have not been empirically verified so far. The identified research gap made a challenge for the author.
Purpose of the article: The purpose of this paper is verifying whether conducting a business activity influences the entrepreneurial way of NGOs acting and indicating the factors that have a significant impact on their marketization.
Methods: Based on the national representative survey of 3 800 of NGOs, including 412 of social enterprises in Poland one-factor analysis of variance (ANOVA) and stepwise backward regression analysis were carried out.
Findings & Value added: The analysis of the results confirms that NGOs operating as social enterprises and NGOs not performing business activity differ significantly. The study indicate that social enterprises have less diversified revenue sources and practice more or less democratic governance model. Moreover, Polish social enterprises less frequently adjust their policy direction to donors' interests. The factors significantly affecting NGOs' marketization include action strategies for several years, activity in favour of external benefit takers, close business cooperation, lack of permanent financing sources, and regular activity combined with flexible working time.

Introduction

The marketization of NGOs through undertaking an activity based on the commercial sale of services and products is a phenomenon which raises controversy among numerous researchers. Traditionally, NGOs act in a sector of social services to solve problems, such as homelessness, exclusion or social pathologies. They also provide different services which cannot be provided by the market, for instance in education, the health care system, culture or art. Driven by a social mission, NGOs introduce their concepts, strongly relying on donations to perform their activity. They also obtain funds in the form of payments from private or institutional donors. Growing social needs and changes in the governmental policy aimed at reducing social aid spending have put pressure on NGOs to develop entrepreneurial strategies to gain financial support. To support their mission-related work, these organizations act to achieve commercial revenues becoming more business-like (see King, 2017, pp. 241-260; Maier *et al*., 2016, pp. 64-86; Coule, 2015, pp. 75-97; Mikołajczak, 2017, pp. 140). Although scholars have theoretically explored this phenomenon and studied the influence of marketization on nonptofits' activity in various contexts, there has been little empirical examination of determinants through which this marketization occur. Young and Salamon (2002, p. 433) identify several explanations of enterpreneurial approach, including increased demand for services, greater willingness by corporations to collaborate with nonprofits, increased demands for accountability, and increased competition. LeRoux (2004, p. 358) proves that government funding and agency size are particularly significant factors driving nonprofits' entrepreneurial activities. Hall (2012, p. 735) states that the core of marketisation is the involvement of third sector providers in a mixed economy of welfare provision. Sanders (2015, p. 129) points that organization outcomes like years of operation; numer of employees and annual budget have an impact on the extent to which a nonprofit is commercialized. A lot of space in the research was devoted to the consequences of the marketization of nonprofits (compare Eikenberry & Cluever 2004, p. 132-140), the impact of markertising on the implementation of the mission (see Vaceková *et al*., 2017, pp. 2103-2123; Sanders & McClellan, 2014, pp. 68-89) or the possibility of financing them (see Han, 2017, pp. 1209-1222). There is also little empirical evidence of significant differences between organizations that undertake business activity - social enterprises and those that do not run such an activity

Therefore, this paper aims at establishing whether the fact that NGOs conduct a business activity as an essential condition of their marketization translates into differences in the way of NGOs acting, and at showing

which of these have a significant impact on their marketization. To achieve this aim, a one-factor analysis of variance (ANOVA) and stepwise backward regression analysis were carried out. The author uses data obtained from a representative sample of 3,800 Polish NGOs. The literature review made it possible to choose the factors of NGO's business-like approach that other researchers consider in their studies.

At the initial stage, some key notions related to the marketization of NGOs and business-like approach are explained. Secondly, research methodology, including data, research methods and a systematization of selected features of NGOs and social enterprises' activity. Thirdly, the paper analyzes differences in these areas between organizations that perform and those that do not perform a business activity. Finally, it states which of the features under scrutiny have a significant impact on the economization of NGOs. On this basis, the author draws conclusions and presents suggestions for further research.

Research methodology

Data for the analyses are collected from the Klon/Jawor Association, which conducted a survey on a representative sample of 3,800 Polish foundations and associations run in the third and fourth quarter of 2015. The survey, commissioned by the Klon/Jawor Association, was conducted by the Millward Brown company. The research was carried out on a random group of associations and foundations drawn from the REGON GUS register (Main Statistical Office) (using December 2014 data), verified on the basis of information obtained from KRS (National Court Register) and data collected in the bazy.ngo.pl network. The data concerning associations and foundations were collected by means of the interview method, which used two research techniques: 1) 2,975 interviews were carried out employing the CAPI technique (direct interviews supported by a computer, conducted by interviewers in an area), 2) 825 interviews were done applying the CAWI technique (an online survey). In both cases, respondents were people performing key functions in their organizations. The data were collected in compliance with the secrecy principle. As part of the report, in the third quarter of 2014, 24 individual in-depth interviews with NGOs employees and leaders were conducted. From among the subjects surveyed, the present author selected 412 organizations which perform a business activity consisting of selling products and services, and 3,386 social-economy subjects which do not conduct such an activity.

To attain the paper's goal identifying differences in the functioning of NGOs that conduct or do not conduct a business activity, a one-factor analysis of variance (ANOVA) was carried out. In this one-factor variance analysis, distribution normality research was conducted with the help of a Kołmogorow-Smirnow test. For those variables which did not meet the distribution-normality criteria in the analysis, a non-parametrical Kruskal-Wallis test was carried out. To check the assumption of variance homogeneity, a Brown-Forsyth (B-F) test was performed due to unequal group sizes. In cases where the variance-homogeneity criterion was met, an F-test was conducted to assess the differences. In other cases, a Welch test was employed to evaluate the averages. Dichotomic variables include social enterprises and NGOs that do not run business activities. At the same time, dependent variables were selected on the basis of literature review. Dependent variables were marked from M1 to M10 characterizing the functioning of NGOs on a five-degree scale.

The first area of research refers to NGOs' developmental plans. The result of the analysis will constitute an answer the question if conducting a business activity creates significant differences for realizing a long-term acting strategy (M1). On a scale from 1 to 5, level 1 means that an organization has development plans and strategies for several years ahead, while level 5 refers to organizations which are not concerned about future conditions and act according to the "here and now" rule. Implementing plans will also mean profit and cost planning within future years' perspective (M2). Level 1 on a five-degree scale means that the organizations surveyed definitely plan their profits and costs. On the other hand, level 5 stands for NGOs' extempore activity: they systematically analyze their needs and capability without planning their budget or expenditure in advance.

Another of the selected areas refers to NGO's cooperation with commercial entities and opening on beneficienciaries – indicates the level of an organization's openness to benefit-takers from outside its structure on the one hand, and cooperation with for-profit subjects on the other. An organization's openness level was also presented on a five-degree scale. The higher the scale level, the more the organization concentrates on meeting the needs of external people (M3). Variable M4 shows the frequency of business contacts. The level of these relationships was presented on a five-degree scale, where level 1 means lack of business relationships, and level 5 – frequent and regular contact.

The next area of an organization's activity refers to stability and regularity of NGOs activity. For this reason, another variable (M5) shows access to finance, where level 1 means permanent sources of finance, while level 5 - an entire lack of permanent financing. Variable M6 describes a level of

regular activity, with level 1 indicating an activity conducted on a daily basis during working hours, and level 5 - an activity performed several times a year or even less frequently.
In the non-governmental activity area related to management style and employment, another variable, called "management style" was accepted where, on a five-degree scale, 1 stands for a one-person management model (autocratic style), and 5 - a participating one (democratic style) (M7). This is complemented by variable M8, which describes, on a scale from 1 to 5, the level of work flexibility, where 1 indicates particular working hours during which employees perform their duties, while 5 means a flexible way of setting up their working time.

Another variable that reflects anxiety of some researchers referring to corrosion of mission due to marketization of NGOs (M9) was accepted. Level 1 means that an organization's mission has not been changed since its establishment; on the other hand, level 5 indicates that the organization has undergone numerous transformations.

Variable M10 defines the level of adjusting NGOs' actions to sponsors' changing interests, where level 1 means very frequent changes in the policy direction, and level 5 - no change in it (Table 1).

Another research goal concentrate on stating which factors presented in Table 1 are significant and determine conducting a business activity. The research aim was not to show (all) the major factors; it only made it possible to choose from the analyzed M1- M10, which indeed influence NGOs' marketization. To do so, the author relied on a stepwise backward regression analysis. To evaluate the significance of linear multiple regression, an F-test was used. A model adjustment was evaluated on the basis of the corrected R2 value. To evaluate dependence force, a multiple regression rate R and slopes of significant variables were established. Lack of redundancy among independent variables was estimated by means of semi-piecemeal correlations. While verifying the correctness of the model, an analysis of the co-ordinatedness of explanatory variables was also carried out, the effect of which is expressed by the VIF factor (variance of inflation factor).

Results

To identify differences in the functioning of social enterprises or NGOs not performing a business activity, a one-factor analysis of variance (ANOVA) was carried out. Within the first stage, distribution-normality research was conducted for all dependent variables, with a level of $p<0.01$ reached in a Kołmogorow-Smirnow test, which gave grounds for rejecting the hypothe-

sis about the distribution normality of the variables tested. As the condition of distribution normality for dependent variables was not met, a non-parametrical Kruskal-Wallis test was employed to compare average survey values. For the Kruskal-Wallis test, the level of variables significance from M1 to M10, except for M4 and M7, was smaller than p=0.05, so grounds were given for rejecting the assumption of the lack of significant differences among average results between NGOs that perform and those that do not perform a business activity. For the Kruskal-Wallis test, the level of variables significance M4 and M7 was higher than p=0.05, so no grounds were given for rejecting the assumption of the lack of significant differences among average results between NGOs that conduct (social enterprises) and those that do not conduct a business activity.

To check the assumption of variance homogeneity, a Brown-Forsyth test was used because of unequal group sizes (412 NGOs conducting a business activity (social enterprises) and 3386 not doing so; data shortages were tackled by not including in the analysis the NGOs concerned) (see Table 2).

The assumption of variance homogeneity was met for variables M3, M4, M5, M7, M10. The test result indicated variance homogeneity of variables in both NGO groups – those that perform and those that do not perform a business activity ($p>0.05$). Therefore, to evaluate averages, an F-test was used. Since, in the case of variables M1, M2, M6, M9, the test result showed lack of variance homogeneity in both groups ($p<0.05$), a Welch test was employed to evaluate averages. The variance analysis showed statistically significant differences in the way NGOs performing or not performing a business activity act for variables M1, M2, M3, M5, M6, M8, M9, M10. For variables M4 and M7, there are no significant differences between the NGO groups (see Table 3).

To establish which factors presented in Table 1 are significant and influencing marketization a stepwise backward regression was carried out. Ten variables were adopted to the model (M1-M10) (table 1), however four of them were removed from the model, because they turned out to be statistically insignificant ($p>0.05$). Finally, the model consists of six variables. The assessment of the fit of the obtained model to the data was made by using the F test. The risk of a 5% error of inference and the associated significance level of $p <0.05$, indicating the existence of statistically significant dependencies, were assumed. While verifying the correctness of the model, a collinearity analysis of explanatory variables was also performed, the effect of which is expressed by the VIF factor (variance inflation factor). The values assumed by the indicator can be interpreted as follows (Larose 2008, p. 125):

- VIF≥10 refers to independent variables' strong collinearity,
- the coefficient of 5≥VIF<10 means moderate collinearity,
- VIF<5 means the lack of explanatory variables' collinearity.

The model turned out to be statistically significant F-Value = 40.29; p = 0.00. Parameters of the variables obtained affecting the commercialization of NGOs - values of directional coefficients, p values, and the VIF coefficient - are presented in Table 4.

As part of the model, six variables were selected with reference to the commercialization of NGOs - (M1) (p=0,002); (M3) (p=0,003); (M4) (p=0,039); (M5) (p=0,000); (M6) (p=0,000); (M8) (p=001) (their p values are less than 0.05). With the exception of M8, all the coefficients are positively associated with the commercialization of NGOs. Collinearity analysis suggested the lack of the problem of correlating independent variables. VIF factor, for variables M1(1,07), M3(1,04); M4(1,02); M5(1,04); M6(1,20); M8(3,43) is presented in the Table 4. The model is therefore described by the following formula:

$$M = 0{,}1204 + 0{,}01038M1 + 0{,}01007M3 + 0{,}00893M4 + 0{,}01798M5 + 0{,}02890M6 - 0{,}01467M8;$$

where:
M: marketization of NGOs,
M1: Having development plans, strategies,
M3: Activity within or/and outside its structure,
M4: Business cooperation,
M5: Stability of financial-support sources,
M6: Regularity of activity,
M8: Work flexibility.

The stepwise backward regression analysis revealed that factors which significantly determine NGOs' marketization (which generates commercial revenue) are action plans and strategies for several years. Moreover, a significant impact on financing an activity by a commercial sale of services and products is exerted by the fact that an entity acts in favour of external benefit takers, thereby going beyond an activity oriented only towards its own members. Another significant determinant of NGOs' marketization is the establishment of close cooperation and relations with business and lack of permanent sources of finance. A significant frequency of NGOs' activity, reflected in the organizations' regular functioning along with working time flexibility, also has a considerable influence on NGOs' decision to undertake a business activity.

Conclusions

The pressure to be more business-like is the phenomenon developing within NGOs and cause significant changes in the way of acting of the nonprofit sector that become more marketized. As the effect of this process social enterprises are developed. Social organizations performing a business activity and operating as social enterprises have more definite strategies and plans of development, calculate their revenue and expenditure more thoroughly. These NGOs also act more regularly, demonstrating greater working-time flexibility. They also open themselves to external recipients, and have less diversified sources of financial support. There are, however, no significant differences between both analyzed NGO groups in terms of their cooperation with business. Nor does the empirical analysis confirm any significant differences with respect to the management style, that is, one of more or less democratic character. The empirical analysis confirms that NGOs as social enterprises gaining profits from a commercial activity more often change a social mission, on the other hand less frequently adjust their acting direction to donors' interests. Probably, it is a result of extra opportunities of gaining financial means thanks to a business activity. The factors significantly determining NGOs' marketization include action strategies for several years, activity in favour of external benefit takers, close business cooperation, lack of permanent financing sources, and regular activity combined with flexible working time.

The author is aware that the investigated features of those NGOs that conduct or do not conduct economic activity do not constitute an entire spectrum of the distinguishing characteristics of the two groups of entities. Additionally, the selected and investigated determinants of the marketization of NGOs' activity do not constitute all the causes of these organizations' marketization process. Further empirical investigation might extend and refine theoretical explanations, or provide additional empirical evidence. Efforts are needed to advance knowledge about less thoroughly understood issues of organizational structures and managerial processes. Limitations of the study point to further research to provide additional empirical evidence of business-like approach. Further research efforts are needed to discover other significant determinants of NGO's marketization as well as about less thoroughly understood issues of effectiveness of NGOs becoming social enterprises which for the most part is the self-assessment of these organization.

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Annex

Table 1. Variables examined

NGO conducts/does not conduct a business activity (dichotomic variable, grouping) **Dependent variables (from M1 to M10)** **Marks on a scale from 1 to 5**	
M1	Having development plans, strategies (1 - yes, for a few years ahead, 5 - definitely not)
M2	Detailed revenue and expenditure planning (1 - definitely yes, 5 - definitely not)
M3	Activity within or/and outside its structure (1 - only within, 5 - only outside)
M4	Business cooperation (1 - lack of contact, 5 - frequent and regular contact)
M5	Stability of financial-support sources (1 - very stable, 5 - not stable at all)
M6	Regularity of activity (1 - every day on week days within working hours, 5 - a few times a year or less frequently)
M7	Management style (1 - autocratic, 5 - democratic)
M8	Work flexibility (1 - fixed working hours, 5 - flexible working time)
M9	Mission variability (1 - lack of changes, 5 - numerous changes)
M10	Adjusting policy directions to donors' changing interests (1 - very frequent changes in policy directions, 5 - lack of changes in policy directions)

Source: own elaboration.

Table 2. Kruksal-Walis and Brown-Forsythe test results

Variable	P	
	K-W	**B-F**
M1: Having development plans, strategies	0.00	0.01
M2: Detailed revenue and expenditure planning	0.01	0.00
M3: Activity within or/and outside its structure	0.00	0.13
M4: Business cooperation	0.32	0.58
M5: Stability of financial-support sources	0.00	0.22
M6: Regularity of activity	0.00	0.00
M7: Management style	0.46	0.92
M8: Work flexibility	0.00	0.01
M9: Mission variability	0.00	0.01
M10: Adjusting policy directions to donors' changing interests	0.00	0.51

Source: own elaboration and analysis on the basis of a survey data of Klon/Jawor association research on "*Condition of the third sector in Poland in 2015*"; calculations run in STATSTICA 12.

Table 3. Variance analysis

Assessment category	NGOs conducting a business activity (social enterprises)	NGOs not conducting a business activity	Test-F Value	p	Welch-Test Value	p
	Average value					
M1: Having development plans, strategies	2.81	2.42	-	-	28.85	0.00
M2: Detailed revenue and expenditure planning	2.91	2.68	-	-	9.49	0.00
M3: Activity within or/and outside its structure	3.00	3.29	14.39	0.00	-	-
M4: Business cooperation	2.48	2.42	1.02	0.31	-	-
M5: Stability of financial-support sources	2.47	2.90	27.81	0.00	-	-
M6: Regularity of activity	2.45	1.57	-	-	221.25	0.00
M7: Management style	3.16	3.09	0.60	0.44	-	-
M8: Work flexibility	2,89	2,76	-	-	8.19	0.00
M9: Mission variability	1.68	1.82	-	-	5.99	0.01
M10: Adjusting policy directions to donors' changing interests	3.90	3.70	7.94	0.00	-	-

Source: own elaboration and analysis on the basis of a survey data of Klon/Jawor association research on "*Condition of the third sector in Poland in 2015*"; calculations run in STATSTICA 12.

Table 4. Parameters of independent variables of the stepwise backward regression model

Independent Variable	Coef	SE Coef	T-Value	P-Value	VIF
Constant	0.1204	0.0205	5.86	0.000	-
M1: Having development plans, strategies	0.01038	0.00340	3.05	0.002	1.07
M3: Activity within or/and outside its structure	0.01007	0.00338	2.98	0.003	1.04
M4: Business cooperation	0.00893	0.00433	2.06	0.039	1.02
M5: Stability of financial-support sources	0.01798	0.00305	5.90	0.000	1.04
M6: Regularity of activity	0.02890	0.00385	7.50	0.000	1.20
M8: Work flexibility	-0.01467	0.00460	-3.19	0.001	3.43

S	R-sq	R-sq(adj)	R-sq(pred)
0.290890	7.84%	7.64%	7.33%

Source: own elaboration and analysis on the basis of a survey data of Klon/Jawor association research on "*Condition of the third sector in Poland in 2015*"; calculations run in Minitab 18.

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The strategic importance of customer service of pharmaceutical retailers

JELClassification: *M31; P23*

Keywords: *strategic importance; customer service; pharmaceutical enterprise; level of service.*

Abstract

Research background: in a buyer's market, the main advantage of pharmaceutical enterprise is to provide customers with high-quality medical products and pharmaceutical support during the maintenance process, so that the client received the expected effect, did not want and could not refuse the purchase, and also formed a positive, even loyal impression about the pharmaceutical retailer. In order to achieve the goals, it is necessary to determine the strategic importance of customer service for pharmaceutical retailers, to demonstrate the feasibility of implementing declared standards and providing a high level of service. The mentioned actualizes the in-depth study of the strategic importance of customer service for pharmaceutical retailers and allows us to develop a mechanism for positioning pharmaceutical enterprises according to the level of customer service.

Purpose of the article: to determine the strategic importance of servicing pharmaceutical companies in order to determine the strategic directions and priorities of the pharmaceutical enterprise in the context of customer service.
Methods: general scientific and special methods, such as synthesis and system analysis, economic analysis, comparative and indicative methods, grouping, survey method, logical analysis, analysis of absolute and relative values of the indicator, were used in the process of research.
Findings & Value added: the article proves the importance and strategic importance of customer service for pharmaceutical retailers, and also allows us to determine the sequence of actions that pharmaceutical retailers need to accomplish in order to implement certain strategic priorities in the context of customer service, and also proposes a mechanism for positioning pharmaceutical retailers by the level of customer service.

Introduction

Satisfaction of the needs of clients in medicinal products is decisive for strategic planning of customer service for pharmaceutical retailers. Pharmaceutical retailers need to develop an effective customer service system to ensure the maintenance of an appropriate level of service, which is determining factor of competitiveness and ensure the successful functioning of the pharmaceutical market for a long-term perspective, which actualizes the research topic.

The peculiarities of the pharmaceutical market do not allow to clearly formulate standards and customer service levels due to the following factors: the impossibility of building a sustainable supply chain, since there is currently a lack of consumption of medicines; the presence of significant competition in the limited, in certain segments, the volume of the market; rapid but not always economically and socially justified increase in drug prices. Therefore, there is a need to substantiate theoretical positions, to develop methodological approaches and practical recommendations for servicing clients of pharmaceutical retailers. An indicator of the strategic importance of customer service to pharmaceutical retailers and the positioning of retail pharmaceutical companies by the level of customer service allows to choose a customer service strategy.

In the process of writing the article general scientific and special research methods are used: the semantic method for completing the categorical apparatus; analysis, synthesis and comparison - in order to study the object and subject of research; situational - for analyzing the activity of pharmaceutical retailers; survey - to determine the priority of customer service at pharmaceutical retailers; mathematical methods - the first, which

is based on the analysis of "absolute value" (position on the scale); the second, which is based on the analysis of relative importance (position compared to other components of the company) - to determine the strategic importance of customer service at pharmaceutical retailers.

In the publications of foreign scientists, the topics of customer service are widely investigated, for example: 1) the research of the quality of customer service of pharmaceutical companies using the CFA model (Niaz Ahmad and other 2009 26-45), where the information is analyzed in the process of polling of pharmaceutical companies and by means of factor analysis, the reliability of the developed scale of measuring service quality with four values and ten factors is confirmed; 2) the quality and level of service depend on many factors and have a direct impact on the satisfaction of the clients of the pharmaceutical market (Uma Maheswariita others 2016 258-284). Identify the most important factors affecting the quality of services in the pharmaceutical market (in the product supply chain) and their impact on customer satisfaction may be based on the results of a survey of experts (distributors), further discussion of the results and their synthesis using the SERVQUAL quality measurement scale. Research have shown the relevance of factor analysis (AMOS 20) to identify critical factors affecting the quality of services and the level of customer service in the pharmaceutical market.

The level of customer service depends on the peculiarities of the organization's logistics activities in the context of the biopharmaceutical supply chain (Christian L. Rossetti et al. 2011, 601-622), where a clear organization and quality management can achieve the desired level of service among the members of the supply chain of biopharmaceutical products.

The following study, described by the authors of the study (Jiinpo Wu et al. 2006, 67-78), shows the means for studying the dynamic supply chain and analyzes the behavior of the pharmacy supply chain by constructing a Forrester model for modeling and measuring its managerial effect. Reliability of the proposed model is confirmed by three tests: stability, temporary phase and oscillation scheme. Based on the simulation of this study, there are two issues that deserve the attention of CEOs - demand planning policy that ignores inventory regulation, which may reduce the efficiency of the supply chain and the growth of customer needs affects on the productivity growth of the supply chain.

The dynamics and content of the relationship between internal efficiency and supply chain elasticity create the prerequisites for the formation of the third component of evaluation of their effectiveness- the level of customer service (Krykavskyi E., 2016, pp. 30-41).

Research methodology

The purpose is to determine the strategic importance of servicing and modeling the customer service of pharmaceutical retailers is to use mathematical methods and, based on the obtained results, design solutions for improving the standards and elements of customer service. Investigating the functioning of pharmaceutical companies in retail customer service(observation and analysis of the work of seven largest retail chains of medicinal products in Lviv), is noted feature - the monotony of the same operations in the process of customer service during their implementation at the points of sale. This gives the opportunity to formulate the classification of similar types of customer service processes and to distinguish exclusive processes,based on distinctive features of qualitative and quantitative performance, and to determine the level of customer service for pharmaceutical retailers.

Pharmaceutical business plays an important role in the implementation of socio-economic objectives, therefore, a high level of customer service (pharmaceutical support) should be strategic in nature. Determine the strategic importance of servicing pharmaceutical companies with the use of scientific methods, the essence of which is to analyze the absolute and relative importance of customer service based on data received during the survey of the heads of pharmaceutical enterprises regarding the place and importance of customer service in the process of forming the strategy of the pharmaceutical company. The application of these methods to determine the strategic importance of customer service requires a lot of effort from the researcher, firstly, to determine weighty characteristics and to formulate questions, and secondly, it is difficult to set a gradation for evaluating their significance.It is possible that the obtained results regarding of the strategic importance of customer service on the basis of a survey conducted by pharmaceutical company managers will have a subjective character, because it is likely that the respondent will indicate an overestimate of the proposed question.

As a result of the application of the above methods, pharmaceutical companies will receive information, necessary to determine the strategic priorities of the enterprise in the area of customer service, and clients receive the information they need to make a decision about where to buy pharmaceuticals and receive pharmaceutical support.

Results

Pharmaceutical retailers should set a goal to provide an appropriate level of customer service for delivering targeted effects and delivering results in the context of: strengthening of competitive positions in the pharmaceutical market; increasing the share of the pharmaceutical market in the retail segment, making profit. Therefore, ensuring a high level of customer service for a pharmaceutical retailer should be a matter of deliberate choice, and the definition of the strategic position of the pharmaceutical company is possible in solving the following issues:

1. What is the strategic priority of customer service?
2. What position it want to achieve in relation to competitors in the pharmaceutical market?

It's hard to get answers to the first question, because customer service is important for each pharmaceutical company, but it does not always matter strategically.This conclusion can be made on the basis of the research of seven of the largest networks of pharmaceutical retailers (Table 1),in which there is a fairly well developed network, the characteristics of the activity shows that the emphasis is on customer needs and service, however, based on a specific rating, according to customer feedback, it is clear that not all businesses understand the importance of quality and high level of service.

To determine the level of strategic value of customer service for pharmaceutical companies by using two methods:the first is based on the analysis of "absolute value" (position on the scale), the second on the analysis of relative importance (position compared with other components of the enterprise).

In order to determine the appropriate position of the investigated pharmaceutical enterprises (tab. 1) about the strategic importance of customer service, it is necessary to analyze their activities in the context of the service and to clarify the vision of the enterprises' managers with the help of the developed survey form (tab. 2). According to the poll: the maximum number of points is 100; the result above 80 points means that the pharmaceutical company understands the strategic importance of customer service; The result below 75 points means that the pharmaceutical company does not see any strategic importance in the customer service.

The results of the survey of pharmaceutical companies' executives are presented and analyzed on the basis of the absolute value of the strategic vision for servicing clients of pharmaceutical retailers and shown with a scale from 1 to 100 which has the form of a ruler (Fig. 1).

The strategic value of the customer service for a pharmaceutical retailer is symbolized with the right side of the scale: customer service is the only

one or at least the main source of the pharmaceutical company's superiority over its competitors. Another side of the scale (left-hand side) shows that the customer service has little strategic importance for the pharmaceutical company, which, according to the survey results, is not common to any of the investigated pharmaceutical companies. Such a result is got due to the fact that taking into account the specifics of the pharmaceutical market in the retail segment (there are about 5000 local pharmacy networks in the country at the beginning of the year), pharmaceutical companies can compete only in price policy and in the service sector.

It is advisable to analyze the relative importance of the customer service by creating a list of key areas that directly affect the level of the customer service of pharmaceutical retailers. Since the level of customer service depends on factors such as the availability of medicines at the time of purchase, the qualifications of the pharmaceutical staff, the organization of the selling process ofpharmaceuticals, pharmaceutical support, etc., it is advisable to evaluate the priority of such areas as logistics, human capital, marketing, sales (fig. 2). Each of these areas is important, but some are more fundamental to the pharmaceutical company than others.

The task of each respondent from the selected focal group is to diagnose the importance of the key areas of the pharmaceutical company. To perform the process of activities' spheres ranking is possible with making a map for every process; the main task of the respondents was to sort the data out of the maps (fig. 2), and the result of the study was to determine the serial place of the "customer service" card (tab. 3). With a help of the relative importance method, the results of the studyshowed that two out of seven companies saw the sphere of customer service as a priority.

Formation of strategic priorities for pharmaceutical companies in the context of the customer service, is based on the results of the study and requires the identification of the directions of their implementation in the further. The answer to the second question will allow pharmaceutical retailers to determine the sequence of actions that must be taken to implement the identified strategic priorities in the context of the service (fig. 3).

The positioning of pharmaceutical retailers based on the level of service (high, medium, low) is a relative choice and shows the position of the enterprise in the pharmaceutical market in terms of customer service within comparing to its competitors. We propose to position the pharmaceutical companies of retail trade at three levels:

1. Competitive level. The pharmaceutical company creates customers' loyalty through the quality and high level of services. In this case, customer service is crucial for the pharmaceutical company - it is a key point of its superiority over competitors.

2. Comparative level. For most pharmaceutical retailers, the positioning at the comparative level is sufficient. An enterprise strives to meet standards and service levels to be as competitors' as much as possible.
3. Level of consistency. With this position pharmaceutical retailers are trying to comply the basic standards, but do not offer anything more than that. The pharmaceutical company will have to make a lot of effort in adapting its customers' expectations to the proposed level of service.

Conclusions

In practice, companies operating in the pharmaceutical market do not always provide a low level of pharmaceutical services because of the lack of awareness of the responsibility for their customers' lives and health. It is clear that, from an economic point of view, a high level of pharmaceutical services is very expensive and not always justified. So, companies in the pharmaceutical retail market have to go to it only when the products or services are similar to those offered by competitors. However, from a social point of view, on pharmaceutical retailers are imposed with a great responsibility for improving and maintaining public health through drugs consumption and obtaining a range of pharmaceutical services.

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Annex

Table 1. Characteristics of pharmaceutical enterprises of retail trade

№	Name of Company	Number of points of retail trade (for example, the city of Lviv)	Customer Ratings on Quality of Service
1.	LLC «Apteka Znakhar»	12	+
2.	LLC «Market universal LTD» (Pharmacy network „D.S")	16	+++
3.	LLC «Apteka «3i»	36	++
4.	LLC «Solomiia-Service» (Pharmacy network «Podorozhnyk»)	20	+++
5.	LLC "Apteka nyzkykh cin"	21	+
6.	LLC «Dekada-2000»	29	++
7.	LLC «Pharmastor» (network «Apteka dobroho dnia»)	15	+++

Service quality "+++" is high (in individual cases it needs to be improved), "++" is the average (requires a relatively minor improvement), "+" is satisfactory (requires a significant improvement).

Table 2. The form of a survey of managers of pharmaceutical retail enterprises was developed regarding the strategic importance of customer service

		Always	Very often	Often	Rarely	Very rarely	Never
1	The enterprise is guided by the opinions of clients						
2	In cooperation with clients, you can count on a specific help from the service company						
3	Employees of the supply and sale department take into account the needs of customers						
4	The enterprise service subsystem can provide customer service at a high level						
5	Customers can easily collaborate with the company						
6	Organizational structure of the enterprise makes it possible to meet the needs of clients						
7	Customer needs are known at the enterprise						
8	The information system at the enterprise is designed to deliver all data on requests and customer needs						
9	The enterprise management devotes a lot of time to customer service						
10	The enterprise has clear goals and strategies for cooperation in the context of customer service						
The number of points for each sign placed in this column		10	8	6	4	2	0
Amount in separate columns							
Full value							

Table 3. Results of the analysis of the relative importance of customer service

	LTD «Apteka Znakhar»	LTD «Market Universal» (a chain of farmacies „D.S”)	LTD «Apteka «3i»	LTD «Solomiia-Service» (a chain of farmacies “Podorozhnyk”)	LTD "Apteka nyzkykh cin"	LTD «Dekada-2000»	Order of place of card "customer service"
Order of place of card "customer service"	3	2	2	1	3	4	1

Figure 1. Results of an analysis of the absolute strategic importance of customer service

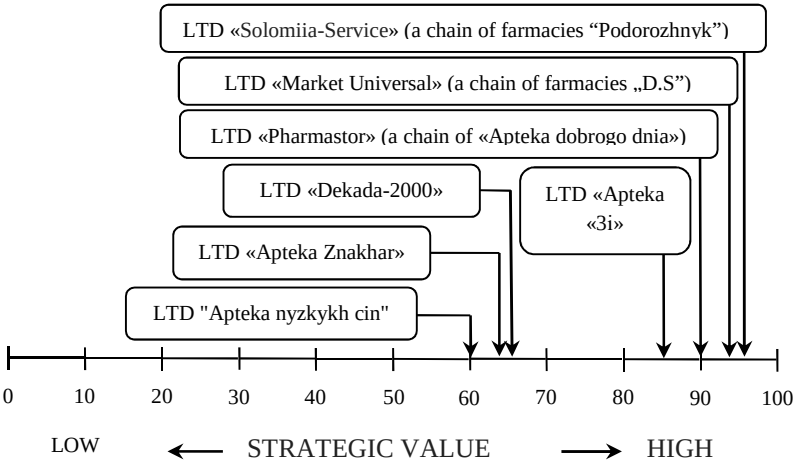


Figure 2. An example of using a card system while analyzing the relative importance of customer service

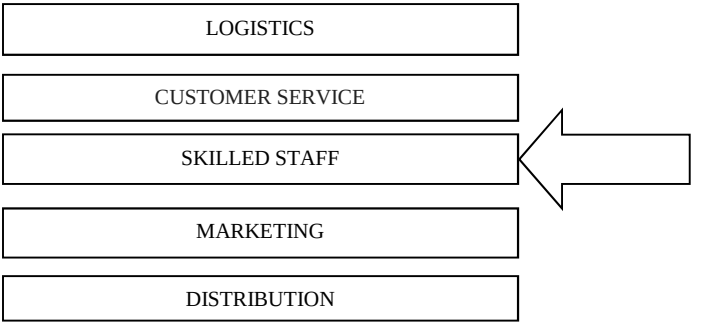
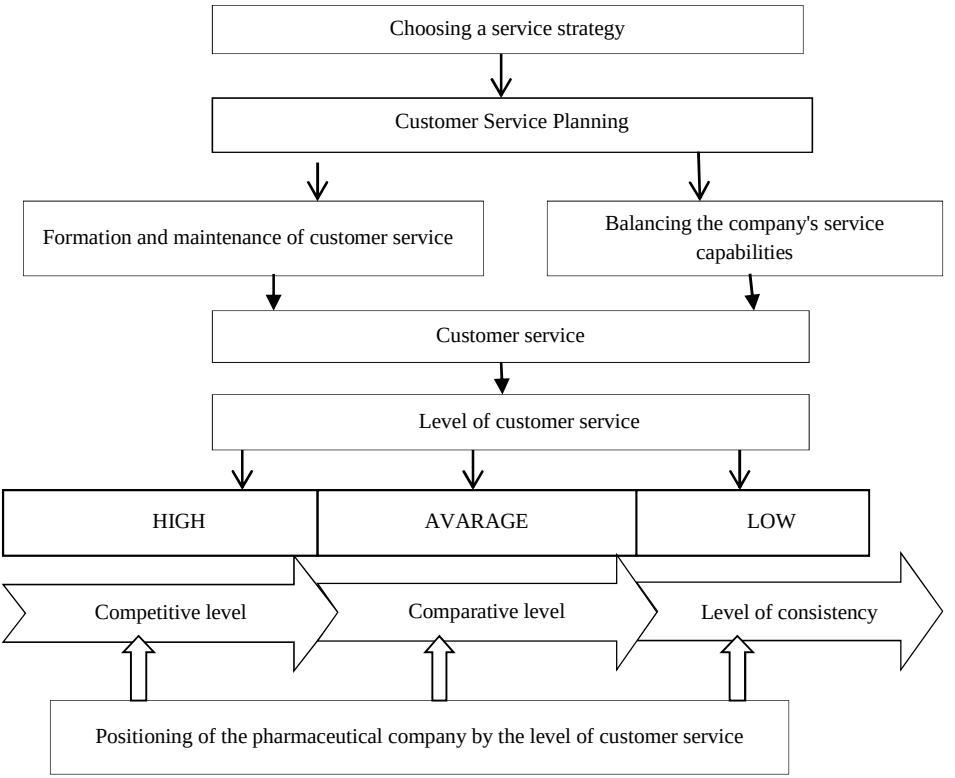


Figure 3. The sequence of actions which form the strategic priorities of customer service



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Impact of training and development on job performance: a conceptual study in an academic institution

JEL Classification: *M1; M12; M53*

Keywords: *Training; Development; Performance; Academic community, Employees*

Abstract

Research background: Practice of training and development in an organization constitute one of the most vital ways of improving on the skills of an employee. To observe requisite global and professional standards in an organization, proactive and regular training and development programs will facilitate the sharpness of employees' abilities. Although, the academic community and by extension a training institution should have a proper training and development programs designed to build the capacity of employees'. However, in the case of academic community such programs are not structured for employees. By virtue of this, the present study seeks to clarify training and development programs run in an academic community.
Purpose of the article: This paper aims to access the impact of training and development on job performance in an academic institution, and the relative performance of their employees.
Method: This study was wholly based on qualitative analysis. Document analysis was employed to accomplish the main goal of the study. Document analysis centers on scientific manuscripts obtained from databases such as google scholar,

WoS, and SCOPUS. Theme for the study were gathered from Human Resource Management(HRM) and human Resource Management Theories. (HRMT). A conceptual framework was deduced from literature to elaborate on the concept of training and development on job performance.
Findings & Value added: The investigation proved that the kind of training and development programs especially mentoring, seminars, on-the-job, and off-the-job-training impact directly on job performance. The implication of this study is that employers and recruiters should adopt proper training programs to correspond with the needs of their employees' job performance. The theoretical benefit is to broaden the scope of training and development in human resource management discipline.

Introduction

To enhance job performance and potentials, employees need to undergo training and development to improve on their skills and build their capacity to augment their institutions effectiveness and efficiency. Indeed, in a situation where institutions believe that training and development is an act of faith, and that employees should find their way is risky with precarious consequences. Training programs must jeer towards the needs of employees. It must also benefit the employees in terms of skills development and capacity to affect their efficiency and the effectiveness, Obisi, (2011). Training and development at all levels in institutions is an important piece in maintaining competitiveness across internal and external spheres. (Armstrong, 2003). It is also vital to human resource management and human resource development. Corporate commitment to training and development should be demonstrated not only in quantitative terms, but also more importantly, in terms of quality. Training increases upward mobility within the organization, adjust workers to technological changes and also introduce staff to the world of work. The organizational training activities may extend throughout a person's entire career and will help develop the individual for future responsibilities. Dadar, Jusoh, & Rasli, (2012) Fishman, (2016) observes that training and development foster the initiative and creativity and aid the removal of outmodedness of employees in an organization, which may be due to age, attitude and inability to adapt to technological changes. According to (Obisi,2011) training is the process through which the talent, skills and knowledge of an employee is enhanced and increased. (Scott, Clothier and Spriegel) agree that training is the backbone of sound management, since it makes employees effective and productive. It would be difficult for a new employee to develop on the job to become a manager without sufficient training and development. According to Mamo-

ria and Gangar, (2009), training is a practical and vital necessity because; it enables employees to develop and rise within the organization by increasing their market value, earning power and job security. Employees attitudes are moulded by training thereby implicitly contributing to the growth of the organization (Drejer, 2000). A well trained employee will make a better economic use of available materials and equipment to reduce wastage. Unfortunately, training and development in many organizations are done in an unsystematic way while others implement them in a manner inimical to the overall success and objectives of the institution. It is worthy to note that academic institutions have a huge work force with varied skills. This study therefore, intends to investigate the impact of training and development on job performance in an academic institution in doing so an attempt would be made to investigate the concept of training and development on job performance.

Literature review

This chapter explains and reviews training and development literature in three thematic expanses namely; human resource management, training and career development and the relevance of training and development in organizations in general. For starters, traditionally training is seen as the process by which individuals within an organization have modified their skills, attitudes or behaviours to suite the technologic, environmental and other related changes (Robins& Decenzo, 2001). In contrast, development denotes the consistent improvement *and* learning, for the achievement of goals for both individuals and organizations. Training revolves more on individuals' needs of present job duties relative to development which is future job responsibilities. (Miller, Greene, Montalvo, Ravindran, & Nichols, 1996). While training principally emphasizes on coaching or assisting people on how to execute their present jobs. Development focuses on building knowledge and skills of people to enable them to be ready for future responsibilities.

The Concept of Training and Development

Denning, (2011) and Ali, (2014) defines training as "a planned intervention aimed at enhancing the elements of individual job performance ". (Ngirwa, 2009) also defines training as "as a learning process in which employees acquire knowledge, skills, experience and attitudes that needed to perform their job better for the achievement of the organizational goals.

(Armstrong,2008) defined training as the planned and systematic modification of behaviour through learning events, programs and instructions, which enable individuals to acquire the levels of knowledge, skills and competences needed to carry out their work effectively. Training is not only to develop workers but also to build their organization to produce the best outcome of their human resources in favor of gaining competitive advantage. This means that training helps employees to obtain new skills, technical know-how and capabilities to solve problems and improve on their performance (Gordon, 1992). Rowden (2002), Suggest that training may also be efficient tool for improving one's job satisfaction, as an employee better performance, leads to appreciation by the top management. Armstrong (1996) expressed an understanding of training by emphasizing that training should be developed and operated within an organization's theories and approaches if the training is to be well understood. Sherman et al (1996) added that the success of training program will depend more on organizations ability to identify their needs. If trainees do not learn what they are supposed to learn the training is regarded as unsuccessful.

According to Armstrong (2006), development is an unfolding process that enables people to progress from a present state of understanding and capability to a future state in which higher –level skills, knowledge and competencies are required. It does not concentrate on improving performance in the present job. It therefore, refers to the future –oriented or driven training and personnel growth of the employee. As far as job and career development are concerned, employees need new skills and capabilities.

Methodology

This study is based wholly on qualitative investigation; the researcher chose to espouse his analysis on documents as a research technique to accomplish the main goal of the study. Document analysis may appear to be unsophisticated research technique, but vivid initiative to develop vital phenomena due to the extent of coverage. The document analysis centres on knowledge from scientific manuscripts obtained from databases such as SCOPUS, WoS, ProQuest and Google Scholar via keywords search. Theme analysis was also adopted to identify relations across variation of research concept, for the purpose of searching for potential relations and designs across the research domain with a deductive goal in mind. (Creswell and Poth, 2017); (Baskarada, 2014). Base on the researchers understanding coupled with information gathered from, secondary sources related domains were identified and linked to the central research concept, training

and development accordingly. Moreover, given array of literature dealing with the wider theme of training. It is prudent to adopt document analysis for the research due the abundant rich context it provides for study's phenomena. Ozolina-Ozola, (2014).

The theme of the study in particular, were frequently gathered from the Human Resource Management, (HRM) strategy research pool and more precisely, from Human Resource Management theories (HRMT) and the research domain of training and development. The net effect is that the sought-after objectives of this study was achieved by relative collated theme(s); of document analysis and relevant content. A conceptual framework was deduced from this escapade. (fig.1). Readers are implored by the researcher to find interest in the scholarly works Fernandez-Alles, & Ramos-Rodríguez, (2009) and Macfarlane, Greenhalgh, Humphrey, Hughes Butler & Pawson, (2011). And others, since they have advocated for the document analysis as a vital tool for conducting this qualitative survey. For an interesting theme analysis readers can read the scholarly works of Huselid, & Becker, (2011) and Youndt, et al. (1996). Under no circumstances does the researcher makes any claim concerning the in depth documentary enquiry and the various theme there off emerging from this enquiry. However, an attempt has been made to identify closely related themes to expand current knowledge of the current study.

Conceptual framework and propositions development

For organizations to have competitive advantage, it must exhibit some form of unique dispositions. The proposed framework is essentially rooted in Theory of Social Learning (SLT) (Bandura, & Walters (1977) Rosenstock, & Strecher (1988) Bandura (1969). Which distinguishes an organization from its competitors this is possible by building a force of superior human resource. Which ideally should provide a challenge for competitors to imitate entirely. The environment has an effect on the learning behaviour of people through imitation, observation and modelling. Bandura (2003) Manz, & Sims Jr, (1981) Weiss, (1978). Based on the aforementioned features, in the human resource management system, one could ascertain that training and development catapult employees to put up their best in an organization to develop themselves and subsequently, improve on their performance. However, it is not the case in some academic institutions in Ghana. Although, most of these academic institutions, if not all, themselves are training and development institutions by (default) but because of the absence of proper training and development models, they lack the competi-

tive advantage. Inadequacies in training and development to improve upon employees' job performance has in recent times become an albatross hindering the effectiveness and efficiency of these academic institutions.

Nevertheless, this conceptual framework seeks to answer a vital question of what could be some of the core processual backgrounds (managerial drivers) which will aid training and development to facilitate job performance. In other words, managers of these institutions should tune the mind set of their workers to appropriate training and development models, to have a competitive edge. Documents from current academic literature and human resource practitioners, were adopted to highpoint the acute organizational training and development programs that could nurture the shaping and effective conceptual framework for training and development model for productive job performance. In effect the authors argue forcefully that these crucial managerial drivers will propel organizations and employees to achieve their maximum potential in terms of job performance as suggested by Marchington, and Wilkinson, (2005) and Bhatnagar, (2007). The authors also focus on the linkage between the method of facilitation for the execution of these training and development programs for job performance.

Moderating factors of job performance

Orientation

New recruits are always anxious to know what is ahead of them, they are eager to put their job description into practice, they are willing to have a feel of the work environment, resources available at their disposal for the execution of their mandate effectively and efficiently. Orientation provides the basic knowledge an employee needs to be satisfied with his job. Kim, Leong, & Lee, (2005). The foundation on which building blocks are laid on for effective employee performance at his first days at work is orientation Gillespie, & Mann, (2004). The companies mission, vision, ideals policies and dealings must be laid bare to the new recruit to serve as the general orientation. The employee must also be taken through job duties and responsibilities goals and current priorities of the specific department he is assigned to prevent future role conflict and develop realistic job expectations. Markos, & Sridevi, (2010). Against this background, we propose that:

P1: *Orientation training provides a complete platform for employee job performance.*

Mentoring

After general and job specific orientations to the employee, newly recruit must be assigned to a more experienced or senior employee or a manager to guide, advice or council him or her, that way there will be a clear path of employee development (Dale, Van Der Wiele, & Van Iwaarden, 2007). In the works of Ahmad et al (2004), Two-way communication should be adopted to promote this agenda. What is expected of employees must be communicated to them in clear and consistent terms to allow for exchange of ideas. Employee must not be seen as only a receptor of ideas but also as a contributor to benefit from employee development. Neely, Gregory, & Platts, (1995). Through this developmental agenda mentee must feel a sense of belongingness, feel respected and accepted within the working environment and above all must have a share of power through participative decisions. Markos, & Sridevi, (2010). Developing a new recruit involves commitment by establishing clear mission, vision and values, managers' must therefore believe in it, own it, and pass it down through mentorship. Employee development must not be glorified as a lip service but rather action oriented activity by top to bottom approach and leading by example. In view of this, the authors propose that:

P2: *mentoring will expedite employees training and development on employees' job performance.*

On-the-job training

For an employee to follow an effective basis for skills development without disruption, while working and learning at the same time, on- the-job training is the ideal training procedure to be adopted, Blundell, et al, (1999). Managers must hand more autonomy to employees by encouraging, independent thinking, by assigning more responsibilities, as well as giving them the free will of choosing their own way of executing their responsibilities. so far as they are producing the expected results; Stacey (2007). Jacobs, (2003), On – the –job training requires physical, material, financial, and information resources for efficient and effective development of employee. Generally, there is the believe that the more employees become conversant with their job the more confident they are, the minimal supervision required of them and subsequently building their self-efficacy and commitment, Wu, & Ang, (2011). Regular feed backs must be adopted to determine the developmental progress. To this end, we propose that:

P3: *on-the job training will have a significant impact on employees' job performance*

Off-the-job training

According to Hiltrop, (1999), the principal basis of cost-effectively reasonable benefit in high performance organization is the exhibition of superior talent. It is therefore, imperative to send staff and employees to different organizational environment with similar vision, mission, with similar organizational values to aide them in developing their skills acquire new skills and learn modern trend of going about administrative procedures, Shobaki, & Naser, (2016). As much as there are numerous merits, it has some level of demerits, if it is not appropriately structured and executed, Tannenbaum, et al (1991). This can serve as a reward for top performing employees. For example, some selected employees can be given a financial support to upgrade themselves. Their knowledge can subsequently be solicited to help others in the organization, without necessarily adopting a habit of frequently sending employees for further training and development. This strategy can help companies and organization to save cost while making their staff effective and efficient and develop them for a long term. Therefore, the researchers propose that:

P4: *off-the job training will have a significant effect on employee job performance.*

Mediating factors of training and development programs

Organising training programs can be a difficult. Especially, when it is not premised on the following factors; quality of the training programs, the relevance of these training programs, and the frequency. (Laird, Holton, & Naquin, 2003). (Miller,1990) indicate that, training programs must be systematically planned to achieve the set objectives. However, a trained employee must know what is expected of him, he must be convinced that his work has an appropriate task variety which will help him to execute a job that matches his skills. Trained employee must feel comfortable working with a team. Strengthening the workforce to enhance performance must be one of the focal points for training programs, (Young, Davis, McNeill, Malhotra, Russell, Unsworth, & Clegg, 2015). However, organizing varied training programs should be an employers' attitude. Rousseau, (1990), also suggest that The period and time frame for training and development

should be an integral part of organizing training programs. Nevertheless, for training programs to be successfully implemented, there are some facilitators; which answer the question how? Some of these mediators include; lecture, demonstration, discussions, presentation and seminar. Lecture is one of the methods in which an address is delivered to an audience (Rubio, Bassignani, White, & Brant, 2008). In a situation where employees are put in a room to receive training; for example, off- the- job training, lecture can serve as a medium of communication. Demonstration for example, can be employed during orientation for newly recruit this method will best help them to understand the task ahead since it is convenient to give practical explanation and exhibition at this stage, (Tannenbaum, & Yukl, 1992). According to Torrance, Colley, Garratt, Jarvis, Piper, Ecclestone & James, (2005), On – the – job training can best serve employees if discussions are used as the medium of communication for trainee staff. This can be a regular discourse to monitor progress and assess feed backs to ascertain improvements emanating from employees under training. Periodic training programs may require seminars and presentations to introduce latest additions to the training regime. (Rushin, De Saix, Lumsden, Streubel, Summers, & Bernson, 1997). Based on the above expositions we propose that:

P5: *Seminar, presentation, discussions and lecture will facilitate training and development programs to significantly affect employee job performance.*

Conclusions

Primary reason for organizations to train and develop their employees is to build their capacities, to be effective and efficient. Organizations must not see training and development as an act of faith and leave it in the hands of employees. Training programs must be tailored to suit the needs of the employees since these organizations are the ultimate beneficiaries. Training aids in competitiveness across both internal and external organizational domains. Moreover, organizations must showcase qualitative and quantitative expressions in terms of the kind of training offered. Nevertheless, training program must be a consistent procedure, which encompasses the entire career of the training beneficiaries to build them up for future responsibilities. It must also be noted that employee's training activities is directly related to output.

Training can be said to serve as the backbone of sound management and increases the market value of employees. Although, training adds to the

market value of employees, some organizations are of the view that training is expensive and therefore, prefer to invest in other ventures within the organization. While training is needed to execute current jobs, development provides skills needed for future responsibilities. However, performance of a staff can be determined by the quality revealed by their output, as required by their organizations. A well trained employee is satisfied, more dedicated and show commitment. Due to technological advancement, training and development is assuming an important role in an organization. Based on the extent literature review, the study reveals that; There is a relationship between training and development programs and job performance. Training and development programs thrives on its effectiveness and these programs impact on job performance. Since this study is purely qualitative, we recommend that a quantitative or empirical studies should be conducted by future researchers. Since the current study is biased towards academic institutions, we recommend that future studies should be conducted in other institutions. Four types of training programs were in consideration for this study. Therefore, if future scholars would be interested in exploring more training programs needed for a similar study.

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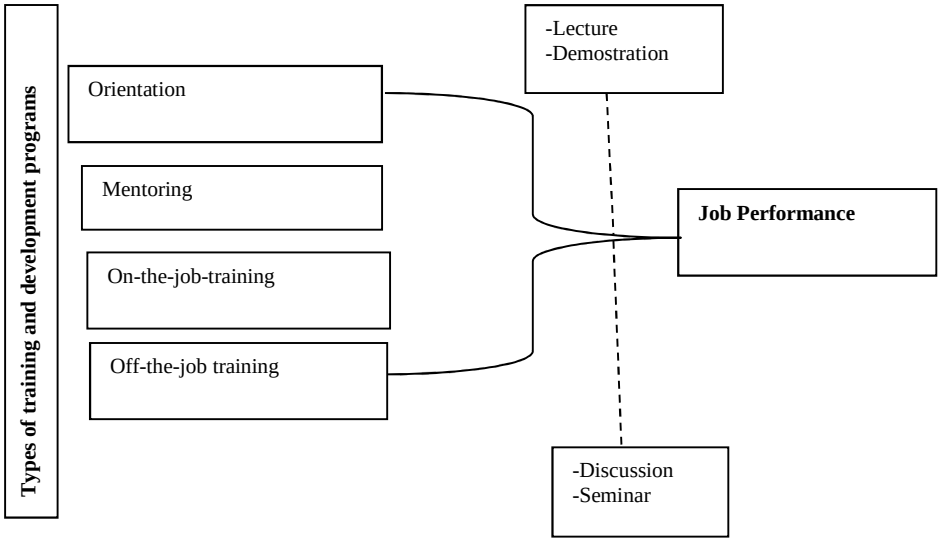
Annex

Figure 1. Proposed conceptual framework



Sources: Authors' proposed model.

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The importance of knowledge in building relational competences in virtual organizations

JEL Classification: *D21; D22; D80 ; J24; L14 ; L20; L22*

Keywords: *virtual organization; knowledge; cooperation, relational competences*

Abstract

Research background: In the current management conditions, relevant knowledge is considered a key source of competitive advantage. The competitive advantage of a company is now based not only on its internal resources, but also it is shaped by the results of its cooperation with the environment. Virtual organizations (VOs), seen as a specific form of organizing cooperation among independent companies, are knowledge-based organizations. Internal knowledge in a VO is built during company's development. External knowledge is created on the basis of relationships maintained with the environment, on the one hand, and built relational competences, on the other hand.
Purpose of the article: The paper is an attempt at the identification of the impact of knowledge on the processes of creating VOs and building relational competences.
Methods: The study included companies operating in Poland. With regard to the research method, data were collected in personal interviews and a personal interview questionnaire was the research tool. The questions referring to the importance of knowledge in VOs were so designed as to reflect the nature of VOs and their characteristic behavioural patterns. The study was conducted in 2018.
Findings & Value added: A VO transforms knowledge into value-added processes in the market space. Without the right knowledge resources and constant learning, VOs would not exist. In addition, having knowledge and experience is the most favorable factor for creating VOs, while their lack is the most limiting factor. The results of the study also show that acquiring new knowledge through learning among partners is one of the leading motivations for cooperation within a VO. In addition to financial benefits, the most important upsides of cooperation in a VO

are: acquisition of new knowledge, exchange of experience and development of human resources. Increased knowledge resources and enhanced relational competences improve the competitive position.

Introduction

In the current management conditions, an increase in the importance of information and knowledge, as well as of mutual relations between business entities have caused changes in the functioning of contemporary companies. Possession of the right knowledge resources and relational competences is considered a key source of a hardly inimitable competitive edge. Nowadays the competitive advantage of a company is based not only on its internal resources, but also it is shaped by the results of its cooperation with the environment (compare: Shin & Kook, 2013, pp. 180-189; Chen (Ed.), 2005, pp. 898 - 902).

Globalisation processes, growth of information societies, pressure on innovativeness, shortened product life cycles, increased significance of information and knowledge resources, as well as a fast pace of modern technology development – all of those phenomena have led to a quest for new, more effective and more flexible methods of organising business activity. The inevitability of those changes makes VO – in the field of practical applications – become an attractive form of running a business, particularly for SMEs (see: Bremer *et al.*, 2001, pp.213-221; Kasper-Fuehrer & Ashkanasy, 2003, pp. 34-64; Mahmood *et al.*, 2018, pp.17-27), which, for one thing, have limited own resources and, for another, are free from burdensome structures and have more operational flexibility.

A VO consists of independent members who in response to an emerging market opportunity quickly build a network of mutual relations, relying on various forms of cooperation. Individual participants employ their key competences in order to create a perfect organisation (they operate as one organisation) supported with modern information and communication technologies (see Kasper-Fuehrer & Ashkanasy, 2003, pp. 34-64). With the key competences of its participants, cooperative relations, temporary work organisation, decentralised authorisations, trust and free business associations and the use of modern technologies, a VO becomes a response of today's enterprises to market changes and it is ready to address the problem of the more and more frequently limited resources of single entities against the increasingly high social expectations (see Mikhailov, 2002, pp. 393-401; Janicki *et al.*, 2015, pp. 19-31). A VO is an organisation heavily dependent on knowledge. Internal knowledge in a VO is built during a company's

development. External knowledge is created on the basis of relations maintained with the environment and built relational competences, which – in turn – affects the competitiveness of VO participants.

On account of the above-mentioned aspects, the research objective has been thus established as an attempt at the identification of the impact of knowledge on the processes of creating VOs and building relational competences.

The theoretical grounds of the publication (section 1) comprise considerations on the essence of VO and on the part played by knowledge and the shaping of relational competences in the creation and operation of VOs. In this paper, a VO is seen as a dynamic form of organising cooperation of independent companies (see Camarinha-Matos & Afsarmanesh, 2007, pp. 119-135; Zhongzhi Shi *et al.* (Eds.), 2008, pp. 211-219; Goździewska-Nowicka *et al.*, 2017, pp. 111-124). The empirical part of the paper (section 2 and 3) is based on the results of research conducted in 2018 which covered companies operating in Poland. The research method involved collecting data from personal interviews and the research tool comprised a personal interview questionnaire. The information obtained throughout the research was subjected to a structural analysis. Additionally, the data were juxtaposed with the results of the previous and ongoing studies on virtual organising and forming relational competences (section 4). Finally, relevant conclusions were drawn (section 5).

Research methodology

The research was conducted in 2018. It covered micro and small companies operating in Poland. The size of an enterprise was classified by the number of employees. It was based on the purposeful selection of enterprises and twenty-two enterprises were selected; they were characterised by high potential for building relational competences and in the past three years they had cooperated with other business entities within a VO. Data were collected by direct measurement – personal interview. Used as the research tool, a personal interview questionnaire was prepared on the basis of the body of subject literature. The questions referring to VOs were so designed as to reflect the nature of VOs and their characteristic behavioural patterns. Thanks to the direct contact with respondents, it was possible to provide extra explanations of the terms used and to obtain comprehensive research material. The group of respondents was composed of enterprise owners.

For the purposes of the research the following hypothesis was made: *suitable knowledge resources are a key element in building relational competences in the process of virtual organising of business activity.*

The information obtained throughout the research was subjected to a structural analysis, which allowed for the identification of the most important aspects of virtual organising. On the basis of the acquired results, the research hypothesis was verified and appropriate conclusions were drawn.

However, the nature of the research does not allow for generalisation of the observed regularities nor their application to the entire SME population due to an insufficient study sample, among other things. Additionally, the use of interview questionnaires is inherently related to subjectivity of responses.

Results

Among the studied enterprises the dominant position (81%) was taken by micro enterprises, while small enterprises accounted for 19% of all the interviewed companies. A vast majority (86%) was represented by service providing companies, with the other 14% being trading companies. Additionally, most of the enterprises (77%) were companies with a regional business range. The nationwide scale of business operations was indicated by 23% of the respondents. All of the studied enterprises had cooperated with other business entities within a VO in the past three years.

In the first place, the respondents were asked about their motivation for choosing this form of cooperation. Since the reason for establishing a VO may differ each time, the respondents were asked to indicate three (out of the list of eight suggestions) most frequent ones for starting cooperation within a VO. There were sixty-six indications. Upon the analysis of the data it emerges that the most popular reasons for establishing a VO given by the respondents were: impossibility to reach an objective single-handedly due to the lack of suitable resources, including knowledge resources (20%); better competitive position/increased competitiveness (18%); acquisition of new knowledge through partnership based on learning from each other (18%); and higher profits than those that would be gained through single-handed goal implementation (17%). It means that the possession of suitable knowledge resources undoubtedly motivates enterprises to create VOs.

Subsequently, the respondents were inquired about benefits from cooperation with other entities within a VO. Out of the suggested list of eight benefits they could choose three most important for their enterprise. There were sixty-six indications. The respondents most often indicated the following benefits: higher incomes (23%); improved competitive position/increased competitiveness (20%); acquisition of new knowledge, exchange of experiences and development of human resources (17%). Thus, besides the financial gains, the studied enterprises perceive new knowledge as a measurable benefit from cooperation within VOs.

Further, the respondents were asked about their opinions on the role of knowledge in the process of virtual organising. At this point closed questions were used. There were four statements and the respondents were to agree or disagree with them. The results are presented in table 1. It turned out that the majority of the respondents indicated all four statements as true. Interestingly, none of those statements had 100% of positive responses. It may mean that for some of the studied enterprises other factors constitute more significant elements of virtual organising. However, the lion's share of the respondents admitted that suitable knowledge resources play a decisive role in building relational competences in the process of creating a VO. One's knowledge, skills and experience bear on the selection of methods of seizing a market opportunity and on the outcomes; they also affect the efficiency of cooperation within a VO. Moreover, acquisition of new knowledge through partnership based on learning from each other finds reflection in future relational bonds of the enterprise with its environment (including other VOs). Also, the relational competences built during cooperation within a VO translate into the building of a competitive position in the market. Thus it may be concluded that the studied enterprises empirically prove that knowledge plays an essential role in the shaping of relational competences in VOs.

Additionally, the respondents were asked about favourable and limiting factors affecting the process of creating VOs. At this juncture the respondents had no limits imposed on their choice and faced open questions. The favourable factors which were most often mentioned by the enterprises included: search for competitive advantages; suitable knowledge resources and experience; development of information technology; development of the electronic market; rising awareness; clients' requirements and expectations; as well as the growing importance of relational bonds between enterprises. Among the most conspicuous factors limiting the creation of VOs there were: lack of knowledge and experience; lack of trust to potential partners; lack of legal regulations for this form of cooperation; lack of open attitude towards changes and entering into such cooperation; as well as

financial risks. Thus knowledge is an essential factor contributing to the creation of VOs, while the lack of knowledge is a critical factor limiting that process.

Discussion

The research results allowed for the positive verification of the research hypothesis. For one thing, the lack of suitable resources (including knowledge) motivates to the creation of VO; for another, an increase in knowledge resources thanks to cooperation within a VO is a substantial benefit for individual participants. In fact, the knowledge and experience gained enable a company to shape its relational competences in its contacts with the environment and may boost its competitiveness. What is more, the studied enterprises prove that possession of suitable knowledge and experience unquestionably stimulate cooperative activities within VOs; whereas their lack is a factor limiting the creation of VOs.

However, the studied sample is not representative of all SMEs, so the conclusions may be applied to the group of the studied enterprises only.

Studies conducted in 2009 on SMEs in Poland demonstrated a smaller role of knowledge in the process of creating VOs. Perhaps it was consequent upon the fact that the studies were carried out on larger research samples or, perhaps, those results were conditioned by the economic crisis which affected business operations. At that time the main reasons for creating VO mentioned by respondents included: lower costs of business activity; acquisition of new markets; higher profits than those that would be gained through single-handed goal implementation; and impossibility to reach an objective single-handedly due to the lack of suitable resources (including knowledge). Remarkably, acquisition of new knowledge through partnership based on learning from each other was on a much lower position. Among benefits from cooperation within a VO there were: higher incomes; better competitive position; entering new markets; and lower costs of business activity. Back then only a few studied enterprises saw acquisition of new knowledge and development of human resources as benefits from cooperation within a VO (Słupska, 2012).

Additionally, it is worth referring to the results of a research project on relational competences in creation of the company value. The research is conducted on a group of large enterprises operating in Poland, exhibiting high potential for innovativeness and ranked as branch leaders (project implementation time frame: 2018-2019). Out of the thirteen enterprises selected for the study eight were studied in 2018; among many other things,

they were asked about building relations with other entities within VOs. It transpired that among the eight large enterprises which extensively expand their relational competences in contacts with the environment, none indicated building relations with the VO environment[1]. It is thus a confirmation of the theoretical considerations, namely: as a form of running a business, cooperation within a VO appeals more to SMEs.

Conclusions

The aim of this paper was an attempt at the identification of the impact of knowledge on the processes of creating VOs and building relational competences. The research provided empirical proofs that knowledge is an essential element in the virtual organising of business activity. On the basis of the obtained results it can be concluded that:

1. upon the analysis of the responses, there are two main reasons for undertaking cooperation within a VO and both are related to knowledge resources: impossibility to reach an objective single-handedly due to the lack of suitable resources (including knowledge); and acquisition of new knowledge through partnership based on learning from each other;
2. besides financial gains from cooperation within a VO, the enterprises mentioned other measurable benefits: acquisition of new knowledge, exchange of experience and development of human resources;
3. the majority of the enterprises confirmed that:
   - suitable knowledge resources play a decisive role in building relational competences in the process of creating a VO;
   - one's knowledge, skills and experience bear on the selection of methods of seizing a market opportunity and on the outcomes; they also affect the efficiency of cooperation within a VO;
   - acquisition of new knowledge through partnership based on learning from each other finds reflection in future relational bonds of the enterprise with its environment;
   - the relational competences built during the cooperation within a VO translate into the building of a competitive position in the market;
4. what is more, the studied enterprises prove that possession of suitable knowledge and experience stimulate the process of creating VOs, while their lack constitutes a factor limiting that process.

[1] Based on data obtained within: research project no 2017/25/B/HS4/02135, National Science Centre, Poland, R.P.Karaszewski-Principal Investigator

The results confirmed the research hypothesis. The study does not finish the subject of the role of knowledge in building relational competences in VOs, though; it is an inspiration for another study on a larger sample of enterprises and for a more profound analysis of the impact of knowledge on the process of virtual organising.

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Annex

Table 1. Role of knowledge in the process of virtual organising

Statements analysed by studied enterprises	Number of enterprises		Percentage	
	YES	NO	YES	NO
Suitable knowledge resources play a decisive role in building relational competences in the process of creating a VO	17	5	77%	23%
One's knowledge, skills and experience bear on the selection of methods of seizing a market opportunity and on the outcomes; they also affect the efficiency of cooperation within a VO	21	1	95%	5%
Acquisition of new knowledge through partnership based on learning from each other finds reflection in future relational bonds of the enterprise with its environment (including other VOs)	18	4	82%	18%
The relational competences built during the cooperation within a VO translate into the building of a competitive position in the market	19	3	86%	14%

Source: own work.

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Horizontal collaboration in sustainable logistics

JEL Classification: *C71; R40; J54*

Keywords: *sustainable logistics, horizontal cooperation, backhauling, game theory*

Abstract

Research background: Currently, with a growing economy and established financial resources, the concept of efficient transportation and logistics has been gaining increasing importance in both research and policy making strategies. Implicit in many of the promoted initiatives towards building smart cities, is the need to promote logistics collaboration. In light of the current fiercely competitive business environment and the problems of globalization that we face, the demand for sustainability requires new designs of models for logistics collaboration.
Purpose of the article: In order to ameliorate this problem, the area of horizontal cooperation between enterprises(shippers) should be considered as it could make a valuable contribution to more flexible and thus innovative and competitive logistics. In this paper, the impact of horizontal collaboration in sustainable logistics has been studied.
Methods: The first specific field of analysis sheds light on an example of collaboration. In this context, methods such as backhauling are described. The investigation of that method focuses on how sustainable it is, and in addition, emphasizes how highly relevant it is to both the innovation and competitiveness in our cities as well as being a viable way to achieve a better utilization of our transporatation capacity. Next, the paper investigates the question of allocating the total cost among the members of the collaboration. Some thoroughly studied cost allocation properties from cooperative game theory are discussed.
Findings & Value added: We conclude that basic cost allocation methods might have some undesirable properties for the shipper collaboration problem. Accordingly, one must choose a set of desirable properties that suit the problem at hand. The findings may serve as a basis for further research on the subject, and

public managers may consider applying our findings in the area of the management of their cities.

Introduction

Sustainability is a term that is widely used to describe the process of enhancing the quality of life and thus allowing people to live in a healthy environment and improve the social, economic and environmental conditions for present and future generations (Ortis et al., 2009).

Over the past 10-15 years, sustainability in freight transport has become a major preoccupation in the logistics sector (Piecyk et al., 2015; Touboulic and Walker, 2015). It is estimated that freight transport accounts for roughly 8 per cent of energy-related CO_2 emissions worldwide (Change, 2007). Making logistics sustainable involves reducing carbon emissions and improving the efficiency of distribution.

The rapid development of the logistics sector has stimulated carriers to establish horizontal coalitions and share their resources. On the one hand, carrier collaboration aims to reduce costs, increase productivity, improve service levels, and strengthen market position by sharing truck capacities and operations (Cruijssen, Cools, & Dullaert, 2007). On the other hand, shipper collaboration aims to reduce empty travel by maximizing backhauling opportunities (Furtado et al., 2015).

In this context, the paper discusses backhaul horizontal cooperation in road transportation as a way of reducing both total costs and carbon emissions during distribution activities in the transportation arena. The backhaul customers are served after all of the line haul customers on the route have been visited. Backhauling results in a more efficient use of the available means of transportation and this in turn produces substantial sustainability and cost improvements for the cooperating companies. In practice, another challenge faced by the supplier is to divide in a fair way the total cost among the cooperating companies. In this paper we address this challenge and discuss methods for the supplier to allocate the total costs among the coalition members.

The contribution of this paper is thus threefold. Firstly, the paper summarizes the recent developments in horizontal cooperation for sustainability. It is demonstrated that the inclusion of backhaul customers in the planning of vehicle routes can decrease both costs and carbon emissions. Secondly, cost allocation methods are applied from the field of cooperative games theory for the studied examples to determine the individual cost for each of the partners in the alliance. Finally, the experimental results high-

light the fact that significant savings may be achieved through cooperation. In order to allocate the total cost to the different partners, we suggest that decision makers should make a comparison between well-known methods.

The paper is organized as follows. Initially, the literature review concerning horizontal collaboration and sustainability is presented. Section 3 presents cost saving allocation methods based on cooperative game theory. Section 4 describes the experimental results, which are further discussed in Section 5. Finally, conclusions, as well as implementation and possible directions for further research, are provided.

Horizontal colaboration and sustainability

The available literature concerning sustainable logistics is mainly divided into two approaches: minimizing costs and minimizing environmental impact. Table 1 shows a number of horizontal cooperation case studies that have been published recently. Despite the different scope, these figures show that horizontal cooperation contributes significantly to reducing CO_2 emissions. Supported by the aforementioned figures, it is clear that freight transportation and logistics cooperation is of critical significance from a social perspective by the reduction not only of emissions but also other environmental issues such as noise, land use and energy consumption (Korzhenevych et al., 2014).

The main activities influencing environmental impact and costs in logistics are: transporatation, manufacturing, produce use, testing, end-of-use alternatives (Neto et al., 2008). By forming a coalition, the partners gain the ability to search for larger improvements in sustainability and efficiency (Vanovermeire et al., 2014). For example, the cost of transportation is one of the factors that may be improved as a result of horizontal collaboration.

In this paper, a simple backhaul-based example is considered to illustrate how collaboration can help carriers to reduce their operational costs. We assume that companies are incentivized to share trucks and routes to reduce both transportation costs and the number of vehicles in use. The goal is to minimize distance-based costs and, as a direct consequence, to reduce the environmental impact. This may be observed in Figure 1, where two carriers A and B operating in three cities are considered. We assume that the cost of traveling between two cities is the same for both carriers and, for the sake of simplicity, that there is no difference in cost between traveling loaded or empty. The cost C and freight F being

transported between cities are given, where a dashed line represents repositioning.

Firstly, a non-cooperative scenario is considered in which each company manages its own clients without backhaul strategies. Without collaboration, carrier A and B will gain the following profits:

Profit A = F13+F32-C13-C32-C21= 800+1200-300-400-200=1100

Profit B = F21-C21-C12=1000-200-200=600

Next, a cooperative scenario is considered, where two carriers are willing to cooperate. If carrier A serves lane (2,1) instead of carrier B, they significantly increase their profit margin by reducing their numbers of empty trips.

Profit Network = F13+F32+F21- C13-C32-C21=800+1200+1000-300-400-200=2100

Results show that significant savings may be achieved through cooperation.

Research methodology

The cost allocation (or gain sharing) issue concerns the problem of how to fairly allocate common costs to collaborative shippers. In this Section, selected allocation methods are introduced.

A *cooperative game* with transferable utility (TU game) is a pair (N, v) where $N = \{1,2, \dots, n\}$ is a player set, and $v: 2^n \to R$ is a function such that $v(\emptyset) = 0$ is called the *characteristic function* of the game. A subset $S \subset N$ is called a coalition, and N is called the *grand coalition*. The number of all subsets of N excluding the null set is equal to $2^n - 1$. When tion S cooperates, the total cost $C(S)$ is generated and it is expressed as

$$v(S) = \sum_{i \in S} C(\{i\}) - S, \quad \forall_{S \subset N}.$$

The first method is *equal allocation*. This allocation method gives an equal portion to each player and is defined by the equation

$$\varphi_i(v) = \frac{v(N)}{N}.$$

The Shapley value (Shapley, 1953: 307-317) is defined by the formula:

$$\varphi_i(v) = \sum_{S \subset N \setminus \{i\}} \frac{|S|!\,(n - |S| - 1)!}{n!}\big(v(S \cup \{i\}) - v(S)\big), \qquad for\ all\ \ i \in S.$$

It is simple to implement, hence it is widely used in both economics and logistics (Krajewska et al. 2008: 1483-1491; Vanovermeire et al. 2014: 339-355).

The last commonly used solutions concept is *Nucleolus*, defined by Schmeidler (1969: 1163-1170). The set X is defined by all the allocation vectors which satisfy the efficiency condition $\sum_{j \in N} x_j = v(N)$ and also the individual rationality constraint $x_j \leq v(\{j\}),\ \forall j \in N$. The nucleolus is an allocation vector $x \in X$ whose excess vector is lexicographically greatest.

Simulation result and analysis

In this section, the total cost of cooperation and the usefulness of the concept of allocation methods for the distribution of the collaborative cost is illustated by testing these concepts on a real-life data set taken from Pradenas et al. 2013.

It is assumed that the carriers and shippers are controlled by the same companies. Moreover, the case in which backhaul-based horizontal cooperation among companies takes place is analyzed. The companies are incentivized to share trucks and routes in order to reduce transportation costs and the numbers of vehicles in use.

In Pradenas et al. 2013 cooperation in vehicle routing problems with backhauling between four transport companies (A, B, C, D) is proposed to promote energy minimization. The results of the different coalition combinations are presented in Table 3, and arranged according to the number of carriers participating in the coalition based on the existing test instance in Pradenas at al., 2013. The objectives are to minimize both costs and the CO2 emissions of transportation. While setting up a new coalition, the players need to take into account the stability of the grand coalition and success of the collaboration. A coalition is considered stable if none of the partners can improve their situation by forming a sub-coalition. It may be

seen in Table 3 that the total cost of a sub-coalition is always lower than the summed stand-alone costs of the players involved.

Depending on the allocation method, a different division of the costs is realized, these diffrences are demonstrated in Table 4. The contribution to the grand coalition is calculated using

$$\sum_{i \in S} (v(S) - v(S\{i\})), \quad \forall i \in N.$$

Table 4 shows the comparisons among equal allocation, Shapley value and Nucleolus. Cost savings allocated to carries are calculated according to the algorithms presented in Section 3. Net cost equals the stand-alone cost minus Cost savings.

The results show clearly that it is worthwhile to cooporate, the cost savings range from 9.3% to 49.7%. For the Shapley value and equal allocation similar results were reported. The Nucleolus method differs however, by allocating higher costs to partner B, due to his higher stand-alone costs and the property of finding a solution in the center of the core.

Every cost sharing method takes an input from a different number of parameters. For instance, the Shapley value method is based only on costs and includes all possible sub-coalitions, while the equal method and Nucleolus method does not take into account all possible coalitions. We can therefore state that by choosing a cost sharing method, a certain incentive is given to the partners in the coalition. The idea is summarized in Table 5. Due to several different challenges faced in establishing a logistics network, the desirable cost allocation properties are identified. Because the carriers are guided by their own self-interests, all of the carriers need to agree on one method. This problem is very important because any unfair allocation immediately causes the alliance to be disbanded. The challenge is to design a mechanism that allow carriers to manage a collaboration and is simple, fast, and effective in terms of benefits to all participants. This issue will be discussed in our future research.

Conclusions

The paper studies the potential of improving sustainability logistics by implementing collaborative distribution. Such collaboration is presented in the form of backhauling that could be an effective strategy to reduce distance-

based costs as well as the emissions of CO_2 during distribution activities in the transportation arena.

The theoretical contribution of the paper is important both in terms of showing the role of sustainable logistics and to engage the attention of company managers and policy makers in many countries around the world in order to emphasize the application of game theory solutions to logistics and product delivery. With this paper we intend to stimulate research into collaborative schemes that may contribute to a reduction in both gas emissions and the number of vehicles in use.

Having studied the application of game theory in sustainable logistics, there now exists a powerful motivational argument for further research into such problems. Several research paths are possible for the current study. One research path would be to develop a metaheuristic approach to efficiently manage routing problems with backhauling and to test this approach. A particularly challenging research direction concerns the proposal of an allocation method that should be fair and acceptable to all carriers. Finally, the formation of coalitions without complete information should also be investigated.

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Annex

Table 1. Selected papers employing horizontal cooperation in sustainable logistics

References	Cost	CO_2
Sprenger and Monch	-25%	
Lin and Ng		-20%
Li	-28%	
Pradenas et al.	-30%	-30%
Juan et al.	-16%	-26%
Soysal et al.	-17%	-29%
Munoz-Villamizar et al.	-25%	-25%
Danloup et al.		-26%
Verdonck et al.	-22%	
Vornhusen et al.	-18%	
Krajewska and Kopfer	-12%	
Cruijssen and Salomon	-15%	

Table 2. List of symbols

N – grand coalition
i,j – an individual player
$S, T \subset N$ – a subcoalition
|S| - the number of partners in coalition S
v – characteristic function
$\Phi_i(v)$ – cost saving allocated to player
C(S) – total cost of subcoalition S

Table 3. Cost of each coalition

Carriers in coalition	Total cost	Cost savings of coalition	Saving ratio	Contribution to the grand coalition
A	804	0	0%	1245
B	1028	0	0%	1340
C	1022	0	0%	2075
D	1011	0	0%	1771
A,B	1751	81	4.6%	
A,C	1745	81	4.6%	
A,D	1747	68	3.9%	
B,C	1985	65	3.3%	
B,D	1784	255	14.3%	
C,D	1867	166	8.9%	
A,B,C	2457	397	16.2%	
A,B,D	2775	68	2.5%	
A,C,D	2357	480	20.4%	
B,C,D	2775	286	10.3%	
A,B,C,D	2793	1072	38.4%	

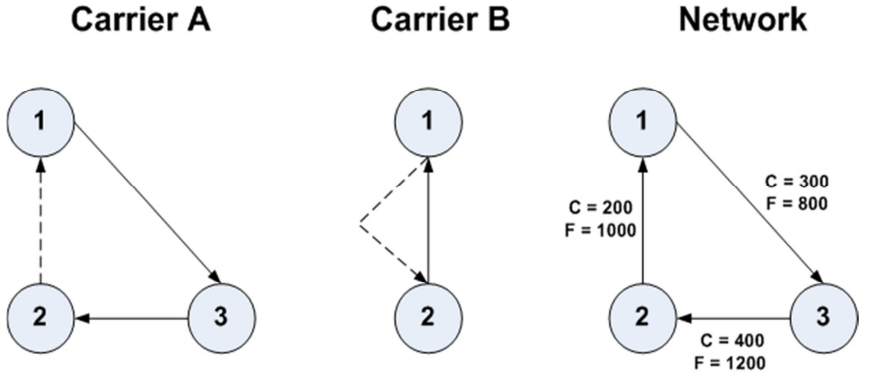
Table 4. Allocation of coalition costs using different methods

		A	B	C	D
Equal allocation	Cost savings	268	268	268	268
	Net cost	536	760	754	743
	Savings ratio	33.3%	26.1%	26.2%	26.5%
Shapley value	Cost savings	253.9	217.8	340.3	260.1
	Net cost	550.1	810.3	681.8	750.9
	Savings ratio	31.6%	21.2%	33.3%	25.7%
Nucleolus	Cost savings	289.8	95.8	507.8	178.8
	Net cost	514.3	932.3	514.3	832.3
	Savings ratio	36%	9.3%	49.7%	17.7%

Table 5. The incentives of different cost sharing methods

Property	Definition	Equal	Shapley	Nucleolus
Efficiency	the total value of the grand coalition is distributed among the players	+	+	+
Individual rational	the total value of the grand coalition is distributed among the players	+	+	+
Dummy players	the total value of the grand coalition is distributed among the players		+	+
Stability	Individual rationality is ensured for every sub coalition.			+
Monotonicity	The monotonicity property guarantees that the charges will be non-negative, and the system will not lead to any player subsidizing any other player	+	+	

Figure 1. Collaboration among two carriers - backhauling scenario



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CSR - an element of the company's strategy, image or greenwashing?

JEL Classification: *M14; M15; O15; Q56*

Keywords: *management; CSR; environment and development; organizations culture*

Abstract

Research background: Modern companies are looking for a competitive advantage, not only in new technologies and innovative products offered to clients, but also in the introduction of modern tools to management. This type of activities includes the implementation of the concept of sustainable development, ecodevelopment and CSR into management practice. In practice, their implementation can serve different purposes and fulfill various functions. Research shows that some companies with a strong market position try to shift organizational and financial burdens associated with the implementation of selected socially responsible practices to their subcontractors, while usurping at the same time the effects of their application. Also they often introduce solutions that the market forces to apply as CSR initiatives, although in practice they are PR activities only. Therefore, it is interesting to conduct research aimed at diagnosing the real intentions of introducing this kind of solutions into practice.
Purpose of the article: The analysis of literature and company information on CSR practices and sustainable development, including eco-solutions, allows us to diagnose research areas that require deeper analysis and allow us to determine the purpose of the proposed article. It is to examine how individual pillars of CSR and sustainable development are used in creating and implementing the organization's strategy and shaping its image, and in what situations it should be assessed as a "greenwashing".
Methods: Implementation of this objective will be served by the study of international literary sources, as well as case studies conducted on the basis of source

materials of selected companies and institutions involved in reporting good practices.

Findings & Value added: The result of this analysis will be the presentation of the study outcome and the conclusions that result from it for business practice. Particular attention will be paid to issues concerning the influence of organizational culture on the implementation of socially responsible activities or their faking, as well as the impact of implementation of social responsibility assumptions on organizational culture and company management.

Introduction

For many years there have been attempts in highly developed countries to find a compromise between striving for profits and such a way of functioning that guarantees maintenance of a positive image in a long period o time. Solutions resulting from the implementation and realization of CSR concepts belong to those activities by means of which managers try to join these areas.

All the activities taken voluntarily by the companies within the concept of CSR are indicated by ethical standards and exceed the minimum level of commitments towards stakeholders resulting from the rules of law (Anyanuwu & Nweaka, 2014).

In the opinion of Albinger and Freeman, CSR is the most appropriate configuration of social responsibility principles, processes of reaction to social problems and also of policies, programs and possible to follow results, referring to company social relations for each business organisation (Albinger & Freeman, 2000, p. 243). And all the activities taken voluntarily by the companies within the concept of CSR are indicated by ethical standards and exceed the minimum level of commitments towards stakeholders resulting from the rules of law.

In spite of undeniable benefits resulting from CSR rules numerous questions and ambiguities concerning the implementation and realisation of CSR arise as well. First of all, it is still discussed who should be socially responsible - business or a businessman. A precise distinction between PR activities (Gohil & Gohil, 2016) and CSR activities is another area of dispute. Dispute also concerns such an issue as how far CSR can be formalized (Pflugrath et all., 2011) and measured and finally whether the obligation of being socially responsible can be imposed on companies.

However, in reality we hear more and more often, that under the guise of CSR activities, companies use fraudulent practices or even commit misdemeanors and crimes which allow them to achieve a better market position, sometimes even without generating additional costs (Toppinen et ell.,

2010). That's why one should agree with the statement of Sachs, that the societies indiscriminately recognized the implementation of the sustainable development and CSR as a salvation for the Earth, witch is environmentally endangered (Sachs, 2010, pp. 1-5).

That's why the questions arise: Firstly, is it the acquiescence for the unfair practices, if its possible to conceal them, the true reason explaining appearances of irregularities in the implementation of CSR, and likewisly the cause for tendency of using cheap catwalks instead of real activities? Secondly, is it the desire to generate profit with lowest possible cost the source of such behavior, or are there other factors responsible for such a state of affairs, like cultural conditions, for the example?

The consequence of asking these questions is a study aimed at assessing whether the largest Polish companies reach PR practices and greenwashing, implemented under the name of CSR, and what these practices have consequences for the assessment of these companies as socially responsible.

Literature review

In contemporary studies on corporate social responsibility, many researchers notice the existence of a relationship between the possibilities of introduction and implementing CSR, and the dominant culture in the organization. Thanks to this, CSR becomes a management strategy based on multidimensional relations, and not just an attractive public relations tool used for the promotion of the company.

At a same time more and more often one can notice the existence of negative phenomena in business results from the tendency of maximising profit and attempts of frauds and confidence tricks. In the effect the notion of CSI - corporate social irresponsibility is more and more common in world literature (Bowen & Aragon-Correa, 2014).

Increasingly used greenwashing is another activity dangerous for stakeholders and the environment. It's an intentional and beneficial for company act of spreading disinformation, in order to convince stakeholders - especially consumers - that the company acts responsibly and ethically towards society and the environment (Rowell, 2002, p. 19).

Along with how greenwashing methods and techniques become more and more sophisticated and take the form of "symbolic corporate ecologism" (Short & Toffel, 2010, pp. 369-396), they become more and more difficult to grasp and prove.

The brief literature review presented here and the issues raised at it prompted the authoress to make an attempt of investigating whether the

largest companies in Poland seen as socially responsible implement genuine CSR strategies in building market position and image, or do they use unethical, immoral and illegal ways in order to minimize costs while achieving the greatest benefits.

Research methodology

The basic source of information on the basis of which the research was conducted is: scientific publications on the issues, opinions of experts and reports. The presented analysis was also carried out based on data and information provided in the latest CSR reports by companies belonging to the WIG 20 group, as well as reports by journalists specializing in so-called "Investigative journalism", who gather and verify information's about various types of practices that are contrary to the principles of CSR and sustainable development.

The examined companies were divided into three categories, based on information on the basic business profile: industrial and commercial entities, service providers and thirdly insurance and financial companies. In the group of industrial and commercial companies listed on WIG 20 are nine companies: CCC, JSW, KGHM, LOTOS, LPP, PGNiG, PKN Orlen and SANPLAST. Secondly, six companies conducting commercial and service activities: Eurocash, CDProjekt, Cyfrowy Polsat, Orange Polska, ENERGA, PGE and TAURON. Lastly, five Insurance and financial entities: Alior, PKO BP, PKAO SA, mBank and PZU SA.

The study includes the analysis of reports developed after the entry into force of EU rules on the obligation of non-financial reporting. For most companies, these are reports for 2017. At the time when study was conducted, only one company published the report for 2018, so it was assessed by the authoress.

Results and Discussion

Most of the surveyed entities issued integrated reports, adapted to EU requirements and containing a very large amount of non-financial information already in 2016.

The type and level of reporting in the surveyed companies are presented in Table 1.

Only one of the companies does not publish commonly available reports, nor does it place information about the rules and reporting standards

on its website. The fee must be paid to access her reports. The rest not only create CSR reports, but more and more often develop comprehensive integrated reports, consistent with the guidelines of not one, but several standards at the same time.

Most often it is the GRI standard, based on its older version reports 14, while 6 companies use newest version. Increasingly, in the CSR strategy, and thus in its reporting, ISO 26 000 is included - 15 companies, some of the surveyed organizations also include UN guidelines included in the Global Compact (GC) and Agenda 2030 for sustainable development (http://ungc.org.pl/sdg/sustainable-develompent-goals). It is also worth noting, that all companies of the WIG20 group were counted by the Warsaw Stock Exchange analysts among the elite group of stock exchange entities meeting the requirements of the RESPECT Index (RI).

When examining company reports, we see great care taken in their preparation and very meticulous registration of all activities that allow us to state that the company meets the requirement of a standard, which it uses as a basis.

However, it should be remembered that reporting and boasting about achievements and good practices in the area of CSR does not mean that at the same time companies do not conduct activities, that can be considered ethically questionable or even contrary to the CSR and sustainable development principles. The best examples of this are companies from the energy and mining industries. In their reports, they pride themselves on actions for the environment and social well-being, and in practice invest more and more in acquiring and developing conventional energy sources, while the amount of "green" energy they produce is symbolic. In 2017 it was 21 210 GWh at the total production of 179 335GWh, or 12.45% of the total energy generated (https://www.are.waw.pl/).

In energy and mining companies case there are visible elements of PR manipulations. Photographs presented in folders and reports are shown in way that makes elements of the natural environment, forests, green fields and blue water appear in the background. Fuming chimneys are rarely seen however, there are no mine heaps, waste dumps or environmental elements with visible mining damage. Even though in the surroundings of those facilities, changes can be encounter at every step, indicating the degradative nature of their activities. Even though for years they have been one of the largest polluters in Europe (Europe;s ...).

The charts included in the reports show a decreasing emission of gases harmful to human health and the natural environment, including SO_2, but there are no data on changes in CO_2 emissions.

Other matter related to these issues is the excessive exploitation of hard coal deposits, extraction of which becomes more and more dangerous and more expensive, and at the same time it cause more and more mining damage. In 2016 the mining company spent almost PLN 55 million on their removal, and in 2018 it was already over 92 million (https://www.jsw.pl/media/wydarzenia/artykul).

In reports, this problem arises, but is presented in such a way, that the reader may get the impression that it is of no significant, and that it does not contribute to the deterioration of the conditions and quality of life of the inhabitants of city Jastrzębie and it's surrounding.

There are also ambiguities and doubts about the assessment of the actual activity and purposes of CSR reports prepared by other groups of companies. Particular doubts concern the LPP report, in which case it is the first document so comprehensively developed by this company. The question arises whether the company was forced by EU regulations to develop a CSR strategy and undertake reporting, or maybe the aim was to strengthen its image, heavily damaged after the collapse of a building that was LPP's production facility and the deaths of about 1,100 people working there. Probably both events should be connected with each other. Considering the amount of space in the report devoted to efforts made for improving safety at work in Asian companies producing for LPP, this second goal was probably dominant here. Especially that in LPP report there was no mention, that activity resulting with improving occupational health and safety appeared only after this incident, and there is no information regarding the issue of compensation. It seems that in the years 2013-2017, in business practice implemented in Asian countries, LPP switched from greenwashing activities to a carefully developed and implemented PR campaign. But is it already a social responsibility? It's probably still too early for such statement.

In addition to data analysis for individual groups and individual companies, you can also indicate the information appearing in the reports of almost all companies that raise doubts as to their assessment as solutions for socially responsible companies. These issues concern corporate governance, and more specifically diversity policy. Each of the surveyed companies states that they do conduct such a policy and undertakes intensive actions to combat all forms of discrimination, and at the same time it is enough to familiarize with the composition of management boards and supervisory boards in order to gain certain doubts. In each of these groups there are only, or almost only men, also managerial positions are more often occupied by representatives of this sex.

Most of the reports also show data indicating that female employees working on same position as men receives lower salaries. One can speak about reporting information about the existence of the "glass ceiling" phenomenon in the higher structures, while there is no information indicating that the company notices such problem. On the other hand, there are emphasized information about equal participation of women and men in training, identical assessment systems, etc.

For service and financial-insurance companies it's characteristic, that they employ mainly young people, aged no more then 30-40 years, and the number of employees in older age groups is significantly falling. Opposite problem can be seen in industrial companies, especially JSW, where a significant percentage of the crew are people over 40, or even 50 years old, so here, in turn, a generational gap may occur, and as a result an inability to inflow new employees in future. Of course, these phenomena cannot be identified with the negative phenomena that accompany improper implementation of CSR, but in the future they may pose threats to the functioning of the organization and foster unethical practices in the area of employment.

Summing up, in the studied reports, apart from reliable non-financial information, PR elements do appear, but no typical activities have been noticed that can be classified as socially irresponsible or as a greenwashing. High ratings of the reports of the surveyed companies issued by independent auditors and expert institutions, with the Responsible Business Forum at the forefront, seem to confirm this.

Conclusions

The analysis of issues of interest to the researcher made in this study, based on integrated reports, as also reports on sustainable development, CSR and scientific and journalistic studies as well, made it possible to conclude, that in the surveyed companies and their reporting, socially responsible practices and their proper presentation prevail.

However, in many cases, there will also be attempts to bypass or downplay unfavorable information, and to take initiatives included in good practices in order to weaken public dissatisfaction from the negative impact of the organization on social development and the environment, instead of forming conditions for long-term progress for both company and communities that companies can influence.

In the reports under review information’s impossible to unequivocally assess as socially responsible appeared, yet they can be named as PR mes-

sages rather then greenwashing, but they are likely enough benign forms of influence and do not affect the perception of these companies in society.

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Annex

Table 1. The type of report and standards on the basis of which it was created

type of activity	Type of report				Norms of report				Presence in RI
	sust. devel.	CSR	integ.	no data	GRI G4	GRI Stand.	ISO 26000	Diff.	
inds.	3	0	5	1	6	3	8	3	9
serv.	0	1	5	0	6	0	2	0	6
finan.	0	0	5	0	2	3	5	2	5

Source: own study based on company reports.

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Assessment of the commercial potential of biotechnologies and laser technologies: comparison the results of the expert survey

JEL Classification: *O32*

Keywords: *assessing the commercial potential; biotechnology; laser technology; the significance of the factors*

Abstract

Research background: Most of the attempts to commercialize technologies ends in failure, and thus the ability to timely and objectively assess the expediency of technology commercialization, in order to avoid non-productive investments is a crucial step for the institutions engaged in scientific research and R&D. In the course of research has been established, that specifics of different technology manufacturing branches are important for assessing the commercial potential. The scientific literature of the last years did not take into account the specific of biotechnologies and laser technologies.
Purpose of the article: This article discusses in detail the preparation processes of the models for assessment the commercial potential of biotechnologies and laser technologies. The results of the expert survey aimed at determining the significance of the factors are compared, efforts are made to identify differences in the assessment of the commercial potential of these two technology manufacturing branches.
Methods: the multiple criteria method is applied the selection of which was determined by the motive related to the goal of assessment - assess the commercial potential of biotechnologies and laser technologies.
Findings & Value added: Customization model for assessing the commercial potential of technologies for different technology manufacturing branches would allow achieving a more objective assessment of the commercial potential and a more rational use of resources.

Introduction

It is known that each project on technology commercialization is extremely receptive to both time and financial investment. In order to avoid non-productive investments, the organizations performing R&D activities use measures for assessing the commercial potential of technologies to substantiate decisions on the expediency of technology commercialization, i. e. measures for assessing the commercial potential of technologies. However, in the course of research it has been established, that specifics of different technology manufacturing branches are important for assessing the commercial potential.

Initial sets of factors was developed based on previously developed universal set of factors (see Zemlickienė, Mačiulis, & Tvaronavičienė, 2017, pp. 413) and a literature review dedicated to the specifics of the commercialization of biotechnology and laser technologies and the principles suggested by Belton and Stewart (2012). Afterwards, these sets of factors was revised based on an expert survey and was used as the research tool for determination the significance of factors. The article briefly presents the results of development of set of factors and the results of the expert survey aimed at determining the significance of the factors that are compared. Efforts are made to identify differences in the assessment of the commercial potential of these two technology manufacturing branches.

Research methodology: development a sets of factors and determining the significance of the factors for assessment commercial potential of biotechnologies and laser technologies

The first stage of the model's customization process – development a set of factors for assessment commercial potential of technologies. Based on multiple criteria decision making (MCDM) methods, the set of factors is the basis for determining the significance of the factors and the meanings of factor values. Previously proposed set of factors (see Zemlickienė, 2015, pp. 125; Zemlickienė, Mačiulis, & Tvaronavičienė, 2017, pp. 413) was used as a basis in the analysis of the specifics of the different manufacturing branches. With the help of sources analysing the problems of technologies development, of intellectual property law and the problems of different engineering sciences, the author tried to find out challenges and problems are faced representatives of these technology manufacturing branches in the process commercialization and create new sets of factors

for biotechnology and laser technology to complementing previously proposed universal set of factors.

Industrial biotechnology is one of the most promising technologies around. It has the potential to address some of the world's greatest challenges, such as feeding a growing population and offering new alternatives to our scarce natural resources. Although there is a long way to go, if industrial biotechnology reaches its full potential it has the potential to impact the world. The biotechnology pathway in the market in the human and animal health field is very complex limited by the need for comprehensive safety tests, multi-level clinical trials and regulatory approvals.

Regarding Vu *et al.* (2018), Mamzer *et al.* (2018) based on the specificity of the commercialization of biotechnology and the proposed set of factors for evaluating the commercial potential of technologies, it can be stated that the factors most relevant to the commercialization of biotechnology are:

1. Factors included in previously set of factors for assessing the commercial potential of biotechnology:
   1.1. Financing potential (C1);
   1.2. Impact of the potential product durability in order to create a renewable source of income (C5);
   1.3. Predicted period of product development (C6);
   1.4. Ability to copy technology (D2);
   1.5. Competence of technology transfer personnel (F3);
   1.6. Benevolence of national legislation for commercialization (G1).
2. Factors are recommended to be included in the set of factors for assessing the commercial potential of biotechnology:
   2.1. Accessibility of the infrastructure;
   2.2. Accessibility of specialized staff;
   2.3. The consequences of patenting for the development of technology.

Comparing the use of lasers with the use of other technological products, it is important to understand that this is not a mass-market product, and laser technology product developers use the business-to-business (B2B) model. This means that their users will be specialists in specific fields with specific competencies in the field, so in this case a ease of use of the new product, is important i. e. the product must be designed in such a way that its users have sufficient competence to use it. In the development of technology there are a lot of investments for research. On average 5 to 10 years passes from the beginning of the technology development to the first profits. High-tech laser technology is particularly used in the war industry. In order to prevent illegal use of laser technology

in the military industry, there are sufficiently strict regulations on the export of optical components outside the EU. Laser development is not possible without special equipment. Precise mechanisms, electronics, optics manufacturers are required. These components have to be pre-ordered.

Regarding Soo *et al.* (2017), Ferreira and Franco (2017), Khalique *et. al.* (2015), Tsai *et al.* (2017), Vasantha *et al.* (2014) based on the specificity of the commercialization of laser technology and the proposed set of factors for evaluating the commercial potential of technologies, it can be stated that the factors most relevant to the commercialization of laser technology are:

1. Factors included in previously set of factors for assessing the commercial potential of laser technology:
   1.1. Level of experiencing difficulty in the use of the potential product (B4);
   1.2. Predicted period of product development (C6);
   1.3. Dependence of technology functioning on geographical/climatic circumstances (E2)
2. Factors are recommended to be included in the set of factors for assessing the commercial potential of laser technology:
   2.1. Accessibility of the infrastructure;
   2.2. Accessibility of specialized staff.

On the basis of the new sets of factors for assessing the commercial potential of technologies, an expert evaluation questionnaire was designed and a two-stage expert survey was conducted. The surveyed experts were selected considering: 1) experience in the process of technology commercialization in EU countries 2) and positions held by the experts in the institutions developing technologies as well as in the establishments responsible for the promotion and control of technology commercialization. To confirm final sets of factors was conducted the first stage of the research. Figures 1 and 2 present a set's of factors for the development model for assessing the commercial potential of biotechnology and laser technologies. Table 1 describes meanings of factors meanings in set.

In the second stage, the experts expressed their position on the significance of factors. By determining the significance of factors, the direct expert evaluation of the relevance of factors was applied, when the sum of the evaluation of all factors of each expert was equal to 100 %. In this case, the most significant factor receives the highest rating, where as the least significant - the lowest one. During the carried out research, forty-four properly completed questionnaires were received: twenty-two questionnaires for biotechnology and twenty-two for laser technology. The ability to adjust the results of expert evaluation of significance is determined by concordance coefficient W and criterion χ^2 (Kendall 1970).

For calculating the concordance coefficient, factor ranking results suggested by the experts are in use. The findings of the performed research were determined on the basis of the significance of the factors suggested by the experts. Next, concordance coefficient W and criterion χ^2 were established. Having found that opinions were not harmonized, research was repeated until concordation coefficient W<0,5 was obtained and χ^2 exceeded χ^2kr. The significance of all groups of factors g_i and the significance of the factors in group q_i are calculated according to formula (1) and (2):

$$g_i = \frac{\sum_{k=1}^{r} c_{ik}}{100 \sum_{i=1}^{m} \sum_{k=1}^{r} c_{ik}}, \quad (1)$$

$$q_i = \frac{\sum_{k=1}^{r} c_{ik}}{100 \sum_{i=1}^{m} \sum_{k=1}^{r} c_{ik}}, \quad (2)$$

where: r – number of experts; c_{ik} – expert evaluation; i – number of the series of the factor; k – number of the series of the expert.

Results

The significances of the factors were established, which reflects the impact of the factors in terms of the assessed object. The assessment of the factors and groups of factors in significances for biotechnologies and laser technologies is given in Figures 3 and 4.

In order to more clearly present the research result, for groups of factors were provided ranks (Table 2): 1 – financial environment (C=0,20); 2 – value for the consumer (B = 0,16); 3 – legal environment (G = 0,14); 4 – technology features (E = 0,12); 5 – competency of technology developers (F = 0,11); 6 – situation on the market (A = 0,10); 7 – competitive environment (D = 0,08); 8 – inventors profile (H = 0,06); 9 – internal policy of the institution (I = 0,03).

For significance of factors for assessing the commercial potential of laser technologies were provided ranks (Table 2): 1 – financial environment (C=0,18); 2 – value for the consumer (B = 0,16); 3 – technology features (E = 0,15); 4 – situation on the market (A = 0,13); 5 – competency of technology developers (F = 0,11); 6 – competitive environment (D = 0,10); 7 – inventors profile (H = 0,07); 8 – legal environment (G = 0,06); 9 – internal policy of the institution (I = 0,04).

To conclude the conducted research, the significance ranks of the groups of factors in terms of the commercial potential of technologies are provided in Table 2.

Conclusions

The commercialization of technology manufacturing branches is unique; therefore, in assessing the commercial potential of technology, it is necessary to take into account the specifics of each of them. Based on previously discussed specifics of biotechnology, laser technology relevant factors for these branches was detected. Some of them are already included in the set of factors, others are proposed to be included. In many cases, the same factors are relevant to different technology manufacturing branches, which means that the set of factors for different branches was slightly changed.

The assessment demonstrates that the commercial potential of biotechnologies and laser technologies are mainly influenced by the factors such as *financial environment*, *value for the consumer*. In terms of biotechnologies, considering significance, *legal environment* goes in the 3rd, *technology feature*s – in the 4th, *competency of technology developers* – in the 5th (rank is the same for both manufacturing branches), *situation on the market* – in the 6th, *competitive environment* – in the 7th, inventors profile – in the 8th position. In terms of laser technologies, *technology features* goes in the 3rd, *situation on the market* – in the 4th, *competitive environment* – in the 6th, *inventors profile* – in the 7th, *leagal environment* – in the 8th position. In the 9th position is *internal policy of organization for* both manufacturing branches.

The sets of factors the commercial potential of technologies and the identified significance of factors can be used as recommended guidelines for technology developers, investors and potential owners in the decision-making processes of commercialization, investment or purchase of technology and at the next stage of research on developing a model for assessing the commercial potential of technologies.

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Annex

Table 1. Description of factors meanings in set of factors

Factors groups	Factors
A - situation on the market	A1-target market share of the potential product at the technology assessment moment; A2-level of the customer‘s needs regarding the potential product; A3-level of the readiness of the market for the product;
B - value for the consumer	B1-predicted offered value for the consumer; B2-feedback of target customers regarding product concept; B3-level of the uniqueness of the value provided to the potential user of product/technology; B4-level of experiencing difficulty in use the potential product; B5-relative advantage of the potential product;
C-financial environment	C1-the potential to finance; C2-a competitive unit cost; C3-predicted contribution of technology to the profit of the company; C4-predictable period for covering costs of the project on technology commercialization; C5-impact of the potential product durability in order to create a renewable source of income; C6-predicted period of product development; C7-accessibility of the infrastructure for product development.
D-competitive environment	D1-the predicted lifetime of technology; D2-ability to copy technology; D3-intensity of competition.
E-technology features	E1-complexity of technology; E2-dependence of technology functioning on geographical /climatic circumstances; E3-compatibility of the potential product with the existing products.
F-competence of technology developers and relate opportunities	F1-competence of specialized engineering staff; F2-competence of marketing personnel; F3-competence of technology transfer personnel; F4-competence of sales personel; F5-competence of the production unit; F6-accessibility of specialized engineering staff.
G-legal environment	G1-benevolence of national legislation for commercialization; G2-utilization potential of technology; G3-novelty of technology; G4-significance of improvement on prior art - difference compared to the analogue; G5-price for legal protection; G6-the influence of legal protection for the development of technology.
H-inventor/-s profile	H1-inventor's experience in technology commercialization; H2-inventor's academic recognition; H3-inventor's predicted level of involvement as a team member in technology commercialization; H4-inventor’s financial contribution to technology commercialization.
I-internal policy of the institution	I1-compliance of the project on technology with strategy of organization; I2-acceptance of the organization strategy of commercialization for the inventor; I3-image of the organization in the area of technology commercialization.

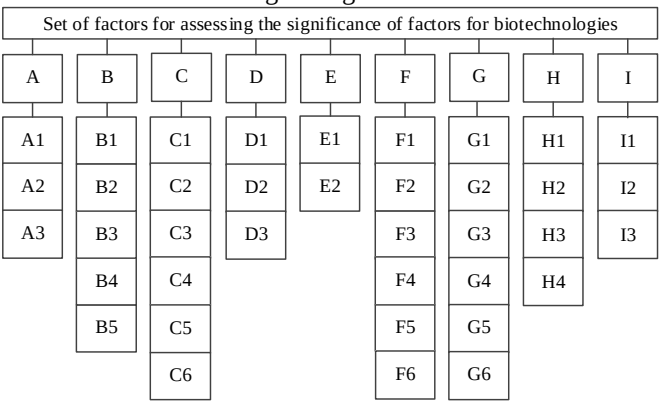
Source: author based on Zemlickienė et al. (2017, pp. 413); Vu et al. (2018), Mamzer et al. (2018); Soo et al. (2017), Ferreira and Franco (2017), Khalique et. al. (2015), Tsai et al. (2017), Vasantha et al. (2014) and expert scientific research results (2018-2019).

Table 2. Ranking the significance of the groups of factors for assessment biotechnologies laser technologies

The significance groups of factors for assessment biotechnologies	Ranks	The significance groups of factors for assessment laser technologies
Financial environment (C=0,20)	1	Financial environment (C=0,18)
Value for the consumer (B = 0,16)	2	Value for the consumer (B = 0,16)
Legal environment (G = 0,14)	3	Technology features (E = 0,15)
Technology features (E = 0,12)	4	Situation on the market (A = 0,13)
Competency of technology developers (F = 0,11)	5	Competency of technology developers (F = 0,11)
Situation on the market (A = 0,10)	6	Competitive environment (D = 0,10)
Competitive environment (D = 0,08)	7	Inventors profile (H = 0,07)
Inventors profile (H = 0,06)	8	Legal environment (G = 0,06)
Internal policy of the institution (I = 0,03)	9	Internal policy of the institution (I = 0,04)

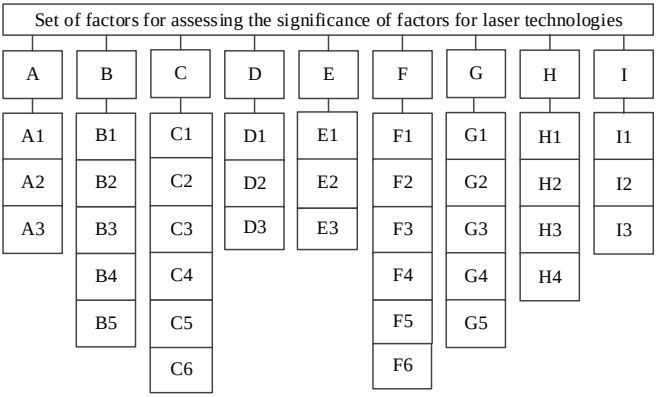
Source: author based on expert scientific research results (2018-2019)

Figure 1. Set of factors for assessing the significance of factors for biotechnologies



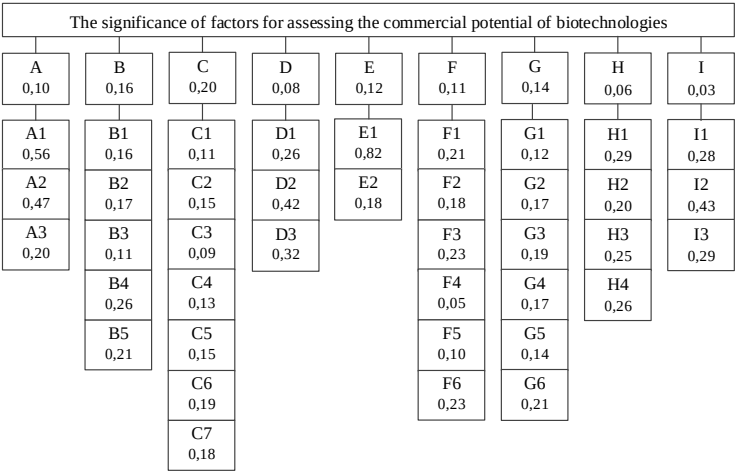
Source: author based on Zemlickienė *et al.* (2017, pp. 413); Vu et al. (2018), Mamzer et al. (2018) and expert scientific research results (2018-2019)

Figure 2. Set of factors for assessing the significance of factors for laser technologies



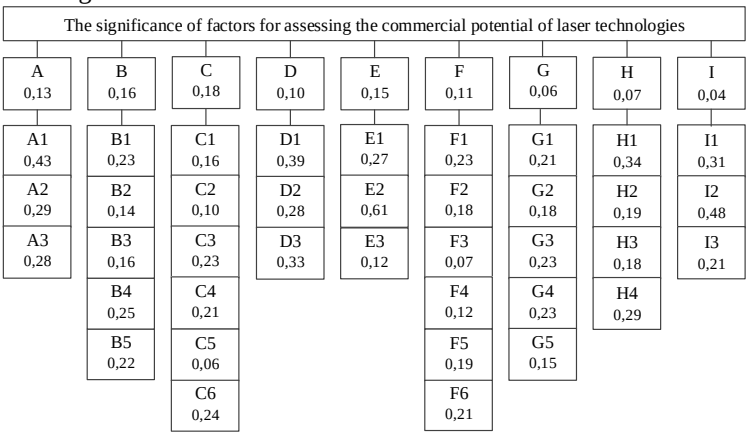
Source: author based on Zemlickienė *et al.* (2017, pp. 413); Soo *et al.* (2017), Ferreira and Franco (2017), Khalique *et. al.* (2015), Tsai *et al.* (2017), Vasantha *et al.* (2014) and expert scientific research results (2018-2019).

Figure 3. The significance of factors for assessing the commercial potential of biotechnologies



Source: own calculations based on expert scientific research results (2018-2019).

Figure 4. The significance of factors for assessing the commercial potential of laser technologies



Source: own calculations based on expert scientific research results (2018-2019).

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Social enterprises as a requisite for organizational diversity and stability in the modern world

JEL Classification: *A13, B55*

Keywords: *social economy; social enterprises; humanistic management; social values*

Abstract

Research background: The most important characteristic of social enterprises is a clear social goal outside of economic goals. In general, this goal can be formulated as the well-being of people in the enterprise. Why do social enterprises arise? The answers to this question can be provided by the perceived effects of globalization processes in the contemporary world. These processes lead to a very high in the 21st century degree of concentration of production and consumption as well as the unification of these processes. As a result, the process of dehumanizing work and alienation is progressing.

The experience of the 2008+ crisis has shown that social enterprises, including cooperative ones, have experienced less of the crisis' effects in comparison to global corporations. The variety of organizational forms of conducting business is therefore an indispensable condition for the stability of socio-economic processes.

This article focuses on sustainable advantages that social enterprises can have in a dynamically changing economic environment.

Purpose of the article: The topic of social enterprises belongs to the common field of interest in economics and management sciences. The aim of the article is to indicate such specific characteristics of social enterprises from the point of view of both disciplines.

Methods: The article is of a theoretical and empirical nature. Apart from the review of literature, international statistics describing the functioning of social enterprises in the world in the second decade of the 21st century were used.
Findings & Value added: The article offers an interesting perspective on social enterprises. Dedicated literature tends to depict social enterprises as a phenomenon, a hobby activity. However, specific analyzes of their impact on the level of production, consumption and quality of life is lacking. Meanwhile, as the article presents, social enterprises tend to have very specific economic and social goals and effectively realize them thus becoming independent, and basically finding their place in the monopolized and globalized market.
The article also presents the characteristics of social enterprises from a management- and economy-orientated points of view. Those characteristics can help in ensuring organizational diversity, contribute to the stability of socio-economic processes and enable the achievement of the welfare goal for people.

Introduction

Social enterprises are closely related to the concept of social economy, which means rational action aimed at satisfying the social needs of people. Social economy is characterized by active social problems solving, which is based on solidarity and cooperation, on placing the common good over individual good or over a narrowly understood group interest. The elements of social capital, such as trust and cooperation, have an essential significance for its development. The co-operative and mutual enterprise business model has for nearly two centuries played an important role in economic development, job creation and addressing market failures (Mazzarol et al., 2018, pp. 551-581). However, social entrepreneurship as a subject of research is still an emerging field (Dionisio, 2019, pp. 22-45).

The social enterprise is the element that identifies the features of the social economy. It is an enterprise because it produces stable goods and useful services with the help of people and material resources, and the owners bear significant economic risks and have a decision-making autonomy in management. Its social dimension is expressed in the supremacy of providing services to members and to the community over making profits. It uses social resources (donations, subsidies, volunteering), it releases a community initiative, it does not make the decision making (exercising power) conditional on the amount of capital contributed. What is also worth noticing is the participation of employees in setting goals as an important element of the job satisfaction model creation (Barnett & Bradley, 2007, pp. 317-363).

The economic criteria of social enterprises are:
1. Business continuity in the production or sale of goods and services
2. High level of autonomy
3. Significant economic risk
4. Employment of paid workers, despite the activity of volunteers.

On the other hand, the social criteria of these enterprises are:
1. A clear goal for social benefits
2. The grass-roots, civic nature of the initiative
3.The principle of "one member = one vote" in the decision-making process
4. Involvement of entities for which the activity is conducted
5. Limited distribution of profits (Leś, 2008, pp. 42-43).

All the above criteria are met by cooperative enterprises. Their role cannot be measured only by the amount of their turnover. What is also important in their case is the social capital that grows out of social interactions and the economic ties between the members of the cooperative. The definitions and concepts of a social enterprise can vary in different social, economic and political contexts (Bidet et al., 2018, pp. 1261-1273).

Research methodology

The research method applied in this study is reviewing existing internet resources in search of information about the activities of the world's largest social enterprises. The study focuses on the industries in which the enterprises operate and the financial results they have achieved.

The International Cooperative Association (ICA) deals with propagating the idea of cooperative and social entrepreneurship. Together with the European Research Institute for Cooperatives and Social Enterprises (EURICSE), since 2006, it publishes the Global 300 Report, presenting the largest cooperatives and social enterprises in the world. The report is published in a special edition of the *World Co-operative Monitor* (WCM). The Global 300 includes social enterprises from dozens of countries with an annual turnover of over 100 million dollars. This is the only report of its kind, collecting annual economic and financial data on the global cooperative movement and social entrepreneurship (Bretos et al., 2018, pp. 5-37).

In the latest, sixth issue of the *World Co-operative Monitor* from 2017, a report was presented showing the world's largest social enterprises based on the 2015 financial data. The data on 2,379 enterprises from eight sectors (1,449 from Europe, 702 from both Americas, 216 from Asia, 12 from Africa) was collected. As many as 1436 organizations had a turnover of over US $ 100 million forming TOP 300 list. Companies from the following

industries have the largest share among the submitted organizations: agriculture and food - 23%, insurance - 18%, banking - 12%, wholesale trade and retail - 8%. On the other hand, the share of enterprises from the industrial sector amounts to 5%, as well as the cooperatives operating in the health, education and social care sector. 1% of cooperative enterprises presented in the report operate in other sectors (World Co-operative Monitor, 2017, pp. 20–21, 80).

The latest Top 300 list includes cooperatives from 27 countries, their total turnover in 2015 amounted to 2164.23 trillion US $. The insurance sector has the largest share in this value - 41%, agriculture and food industry - 30%, wholesale and retail trade - 19%, banking - 6%.

Results

In the top ten of the largest cooperatives in the world there are four cooperatives from France: three from the banking industry, and one from the commercial sector. Second and third place went to American co-operatives in the insurance industry. The largest cooperative enterprises from Germany represent the banking and financial services sectors as well as wholesale and retail trade. Among the largest cooperatives there were also two cooperatives from Japan, both from the insurance sector (World Co-operative Monitor, 2017). A list of the ten largest social enterprises along with their country of origin and industry is presented in Table 1 below.

The development of cooperative enterprises in the 21st century is clearly characterized by an upward trend, but also by internal dynamics. The Spanish Co-operative Corporation *Mondragon*, which can confidently compete with large industrial international corporations is often described in literature as the largest cooperative in the world. Although in 2011-2015 its turnover decreased by 18.4%, it figures at the top position of 10 largest cooperatives in the industrial and tooling industry in the world and at the 35th position in *Global 300* (World Co-operative Monitor, 2017). In general, however, in Spain in the last years of the economic crisis, the economic performance of the cooperative in comparison to conventional companies owned by investors is not worse (Montero & Pacheco, 2018, pp. 115-154).

The analysis of trends in the activities of the 100 largest social enterprises concluded in the last report clearly shows growth in 2011-2015. Figure 1 presents the turnover dynamics of enterprises from particular industries.

In addition to the well-established social enterprises in the banking, insurance, financial, agricultural and commercial sectors on national and international markets, companies from the health, education, social services and other services sectors have shown impressive dynamics. The largest growth of approx. 40% was demonstrated by enterprises from the other services sector. OBOS BBL, with turnover dynamics in 2011-2015 of over 176% is an outstanding example. OBOS BBL provides real estate services. The company offers new and used apartments for housing purposes, as well as provides housing financing. It serves customers in Norway.

A significant increase in turnover (55%) in the period 2011-2015 was noted by Capricorn Society Limited, a membership organization, operating in the trade of automotive parts and accessories in Australia and New Zealand. The company also provides equipment financing, travel, business risk, technology and financial services. The company was founded in 1974 and is based in West Perth, Australia.

The CNS International also had more than 22% turnover dynamics. It is a company founded in 1989 by a group of senior experienced divers, dive supervisors and diving superintendents. The most important CNS resources are based on personal experience and knowledge. Through the implementation of difficult projects at various water depths in many countries around the world, CNS strengthened its position among major domestic and international diving companies

In 2011-2015 period, the dynamics of turnover of over 22% was also demonstrated by Centrale der Werkgeversaan de Haven van Antwerpen (Cepa), founded in Antwerp in 1929 for the organization of work in the port. Currently, Cepa is responsible for the personnel and payroll administration of approximately 9,300 manual workers.

The German DATEV cooperative developed dynamically in the discussed period (increase by 20%). Its members are: tax advisors, lawyers, auditors, small and medium enterprises, municipalities and founders using the DATEV software. The cooperative was founded in 1966.

In the health sector, social enterprises are also developing dynamically. Founded in 1967, Unimed is a thriving system of medical co-operatives in Brazil. It provides services to 18 million patients in the whole country and employs 110,000 doctors. Unimed runs hospitals, ambulances, laboratories, diagnostic centers and pharmacies, making it the second largest network of hospitals in Brazil. From 2011 to 2015, it recorded an increase in turnover by over 50%.The Centre Hospitalier Universitaire et Psychiatrique de MONS-BORINAGE in Belgium was equally dynamic at a rate of 50% .

In Japan, in the Saitama Prefecture - the fastest-growing area in the country, there is a Saitama cooperative. Saitama members are particularly

active in promoting health in society through volunteering. They organize free activities such as walks, exercises, dancing and yoga in public places and parks - over 500 events each month. Most participants of these events are from 50 to 70 years old.

In the banking sector, a high growth rate (60%) is shown by the Federal Credit Union (US). From 1933, the number of its members increased from 7 to over 8 million. It is a financial institution serving the army and soldiers' families.

Global GDP in twenty countries with the largest share in the global gross domestic product increased in 2010-2015 by 21.4%. Therefore, the social enterprises described above kept up with the largest economies in the world. And the diversity of activities undertaken by these organizations confirms their social and economic usefulness.

Conclusions

Cooperatives and the cooperative movement have become the precursor of today's social economy sector. Nineteenth-century members of cooperatives defended their dignity and economic security against the negative effects of the developing industrial capitalism. Similarly, in the 21st century, the dynamically developing sector of the social economy in the world is to a certain extent a response to the processes of globalization and the activity of international corporations striving for a global monopoly. The end of the twentieth century and the 21st century brought global changes in the economy. In the current situation, the tasks of the social economy are perhaps even more significant than ever (Cooperative Movement, 2016).

From the beginning of the 21st century, the social economy has become increasingly important in the European Union's policies. According to the adopted definition, it is "the sphere of civic activity which, through economic activity and public benefit activities, serves: professional and social integration of people at risk of social marginalization, jobs creation, social services of general interest and local development" (Ruch Spółdzielczy, 2016, p.39). The importance of this kind of socio-economic activity is evidenced by the fact that it was recognized as important at the global level by the Organization for Economic Cooperation and Development (OECD) and by the International Labor Organization (ILO).

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Annex

Table 1. The largest social enterprises according to GLOBAL 300 Report 2017

Position	Company	Country	Sector
1	Groupe Crédit Agricole	France	Banking and financial services
2	Kaiser Permanente	USA	Insurance
3	State Farm	USA	Insurance
4	BVR	Germany	Banking and financial services
5	Zenkyoren	Japan	Insurance
6	Groupe BPCE	France	Banking and financial services
7	REWE Group	Germany	Wholesale and retail trade
8	Groupe Crédit Mutuel	France	Banking and financial services
9	Nippon Life	Japan	Insurance
10	ACDLEC - E.Leclerc	France	Wholesale and retail trade

Source: own study based on the World Co-operative Monitor, Exploring the Co-operative Economy Report 2017, www.euricse.eu/wp-content/uploads/2017/11/WCM_2017-web-EN.pdf (accessed on 3/8/2018).

Figure 1. Turnover dynamics (%) of the largest social enterprises in 2011-2015 by industry

Source: own study based on the World Co-operative Monitor, Exploring the Co-operative Economy Report 2017, www.euricse.eu/wp-content/uploads/2017/11/WCM_2017-web-EN.pdf (3/8/2018).

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The impact of quality management on the level of working capital

JEL Classification: *A11; A14; B16*

Keywords: *working capital, quality, management*

Abstract

Research background: Working capital is designed to provide enterprises with financial security. Its level depends on the strategy of managing individual elements of working capital. An appropriate management strategy allows companies obtaining added working capital. Working capital management is a difficult process as it concerns both current assets and current liabilities. Therefore, the company's managers are constantly looking for some solutions, methods and tools that will help them manage their working capital. A quality management system is the one that facilitates control over the management of individual elements that create net working capital. The introduction of appropriate procedures derived from quality management systems in specific areas is a big support for creating a positive net working capital.
Purpose of the article: The aim of the paper is to show how the introduction of quality management systems can positively affect the level of working capital. The article presents how quality management systems allow optimizing the level of individual components creating a positive net working capital.
Methods: The research was carried out on a group of 38 Polish small trading companies operating in the same industry. These enterprises were divided into two groups of companies applying the quality management system and of those that do not use such systems. Based on the financial statements for the years 2015-2018 and using appropriately selected financial ratios, an analysis of the impact of quality management systems on net working capital was carried out. The results in individual areas of management of individual components of net working capital in individual groups of enterprises were compared. The research was carried out with an application of appropriate statistical methods.

Findings & Value added: The analysis showed that enterprises using quality management systems managed working capital more efficiently. In the literature, the subject of the impact of quality management systems on working capital is not popular. The article may be a source for further, extended research and considerations regarding the impact of quality management on the level of working capital in enterprises

Introduction

Management of net working capital is the management of the company's finances in the short term. The basic level of net working capital in an enterprise is influenced by two basic elements, namely current assets and current liabilities. It can be stated that it is the result of developed management strategies for individual elements affecting the level of working capital. Ideally, when a company has positive working capital, which is in a sense a buffer that protects it from losing financial liquidity. However, its too high level may mean unjustified freezing of cash in current assets. A low level is the risk of problems with settling current liabilities. Therefore, there is a problem with determining the optimal value. To achieve this level, it is worth using appropriate measures that will allow comparing the demand for working capital in a given period with its level. However, it should be remembered that lowering the level or increasing the level of net working capital refers to decisions that are most often made in the area related to receivables from customers, inventories or liabilities to suppliers. Actions taken by a company in a given area can actually lead to setting a model level of working capital, but they can lead to unjustified costs. In the case of managing receivables from customers, some steps may be taken to speed up the process of collecting receivables. This can lead to the loss of contractors who will choose a different supplier with a better trade credit offer. Shortening the repayment period may be costly if the company in return has to finance its operations with a more expensive bank loan. Its extension beyond the payment deadline is in turn the risk of the appearance of penalty interest. In the area of warehouse management, switching to the Just In Time method means the risk of holding up production or sales when there are shortages of materials for production or goods for which there is a demand.

An increase in competition in the market, the uncertain economic situation and the specter of the expansion of trade conflicts on the US-China route mean that business managers introduce certain methods and tools that will ensure a positive level of net working capital. Some enterprises start to

operate together in the market within multi-stakeholder organizations. This cooperation together allows enterprises raising the level of net working capital. (Zimon, 2018, pp. 87-94). There are enterprises that introduce quality management systems to improve the management of individual elements affecting the amount of working capital. This is to improve the management process, mainly inventory or the process of debt collection. In general, quality management systems bring tangible results in manufacturing enterprises. In commercial enterprises their usefulness is lower and difficult to assess. On the other hand, in the case of small commercial enterprises, it is very difficult to investigate because few commercial units decide to introduce quality management systems. The purpose of the article is to assess the impact of quality management systems on the level of net working capital in enterprises forming group purchasing organizations (GPOs).

Literature review

There are authors who claim that optimal working capital provides financial resources for the ongoing functioning of enterprises (Bian et al., 2018, pp. 319-332). However, above all what is important, efficient working capital management allows reducing costs and improving profitability(Lind et al., 2012, pp. 92-100). In addition, research on working capital management showed that higher levels of working capital allowed companies increasing sales (Banos-Caballero et al., 2014, pp. 332-338). The authors also state that positive working capital allows obtaining larger discounts in the case of earlier payments ((Deloof, 2003, 573-587). These additional discounts enable to improve the competitive position of enterprises, so it is very important in a situation when the entity is fighting hard for a new contractor or is trying to maintain a regular customer. In general, functioning within branch group purchasing organizations allows enterprises taking advantage of such offers (Zimon, 2018a, pp.811-824). A high level of working capital definitely increases the financial security of enterprises. There are authors who argue that too high levels of net working capital are in turn just unnecessary, unreasonable costs that the company incurs, which negatively affect the financial result. Bank loans, which are often the source of financing enterprises, are often the main source of financing working capital for many companies (Chen, Kieschnick, 2018, pp. 579-596). It is difficult to disagree with the fact that loans increase costs, but the impact of financial costs on the collapse of enterprises is rather small. In turn, Wang (Wang, 2002, pp. 159-169) states that companies from Japan and Taiwan

with a high market position try to maintain low levels of net working capital. That is why it is very important when managing working capital to find appropriate management strategies and methods that will facilitate the control of individual components of working capital. Quality management systems and operations within branch group purchasing organizations can be such methods. They can improve the process of managing receivables and inventories. In addition, an application of quality management systems and the introduction of appropriate procedures allows streamlining control processes in the area of receivables, inventories and liabilities. Enterprises using these two methods are able to optimize their working capital management strategies to the one that is right at the moment.

Research methodology

The research sample included 38 enterprises operating in two Polish branch group purchasing organizations. They are the only two branch GPOs operating in this industry in Poland. The analyzed enterprises were divided into units that introduced various types of quality management systems. It was a group of 10 enterprises. The second group consisted of 28 companies that did not decide to use quality management systems.

The tests were performed using appropriate statistical methods. In tables of descriptive statistics characterizing the distribution of ratios in both groups in particular years, there were such measures as: average, standard deviation, median and minimum and maximum. In order to refine the research, the impact of quality management systems on the most important elements shaping the level working capital was analyzed. On the basis of the conducted research there were identified those elements which were significantly affected by quality management systems. The areas where quality management systems had no impact were also presented. The analysis was made on the basis of financial data for the years 2014-2016.

Results

The conducted analysis showed that all enterprises in the analyzed period had positive net working capital. This can be confirmed by the results of the current financial liquidity ratio, which is closely related to the level of net working capital. The financial liquidity in the analyzed enterprises reaches the average result of about 3. While analyzing the results in terms of the demand for net working capital and its actual state, some differences

were observed. In both groups, higher working capital levels were observed as compared to the demand. The detailed results between the actual condition and demand are presented in table 1. Enterprises that do not use quality management systems in the research chapter marked as group A. Enterprises which use quality management systems in the research chapter marked as group B.

In the majority of enterprises using quality management systems, the level of net working capital slightly exceeds the demand. In enterprises that do not use this system, the difference between actual demand and real ownership is clear. It can, therefore, be concluded that a company using quality management systems manages its net working capital better. Next, the efficiency of managing the most important elements of working capital was assessed. To this end, the operating cycle indicator was used. The detailed results are presented in table 2.

When assessing the results presented in table 3 regarding the operational cycle, it is evident that they effectively manage the key elements creating working capital of companies using quality management systems. The further part of the analysis was to answer the question whether the introduction of quality management systems had a significant impact on the basic elements shaping the level of net working capital. The tests were performed using appropriate statistical methods.

The analysis of turnover ratios for short-term receivables in days, inventories in days and short-term liabilities in days was made. The results for the receivables turnover ratio in days 2015 and 2016 - it was higher in the group of enterprises not using quality management systems, the difference between both groups was close to the level of statistical significance (p =0,0879 for 2015 and p=0.0759 for 2016). The detailed results are presented in table 3.

When assessing the receivables turnover in days, it can be seen that the higher results are obtained by entities that do not use quality management systems. Enterprises using quality management systems manage receivables more effectively.

Large differences in the level of averages were observed in the case of the analysis of the liabilities turnover ratio in days. The presented results indicate that they are quicker to regulate the obligations of the companies using quality management systems. The details are presented in table 4.
Inventories were the last of the analyzed items directly affecting financial liquidity. In the case of inventory turnover in days, no statistically significant differences were observed. The detailed results are presented in table 5.

Discussion

The disadvantage of the analysis is a small test sample. However, it covers 90% of enterprises operating in branch group purchasing organizations that form commercial enterprises.

There are few publications in the literature on the impact of quality management on the level of working capital (Zimon, 2017, pp.643-655). There is also not much information on the impact of quality management systems on individual components of working capital. In the literature one can find information on the trade credit, which is closely related to receivables from recipients and the issue of the quality of the products sold. According to Long and co-authors (Long, 1993, pp. 117-127), trade credit can be used to distinguish between high and low quality products. The literature states that commercial credit is provided by reliable companies whose customers can verify the quality of products before making payments. So, according to this theory, cash payments appear when low-quality goods are sold.

It is worth carrying out further research on enterprises operating in other branches to assess how quality management systems affect working capital and financial security of enterprises.

Conclusions

The conducted research is an introduction to further research on the impact of quality management systems on the level of net working capital. The analysis concerned commercial enterprises operating in branch group purchasing organizations and showed that there were some differences in the level of net working capital in the analyzed groups of enterprises. Capital management is run more efficiently by enterprises that are supported by a quality management system. This is confirmed by the results regarding the level of working capital and operating cycle. A detailed analysis of the more significant elements affecting the level of net working capital showed that statistically significant differences were observed in the area of short-term receivables management. Units that use quality management systems are faster in pursuit of receivables from customers compared to enterprises that do not use such systems. In the case of inventory management, there were virtually no differences. In the area of managing short-term liabilities, big differences appeared.

In summary, companies with quality management systems are charging their receivables faster, and therefore have cash to pay liabilities to suppli-

ers. They regulate liabilities often before the deadline, which allows them obtaining an additional discount, which reduces costs very much. Favorable changes can be seen in the most important cost item in commercial enterprises, i.e. the value of sold goods at the purchase price. Cost reduction has a positive effect on profits. If the owners decide to leave some of the profits in the enterprise, then the level of equity that funds the company's assets increases. As a result, positive working capital appears in this group of companies. However, the trick is to keep it at the optimal level. The conducted analysis showed that support for managing the working capital of the quality management system enables to optimize its level in comparison to commercial enterprises that have not decided to implement such management systems.

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Annex

Table 1. Level of working capital

A (N = 28)	B (N=10)
2014 +14 days surplus	2014 7 days surplus
2015 +16 days surplus	2015 10 days surplus
2016 +17 days surplus	2016 9 days surplus

Source: author's own study.

Table 2. Average results for the operating cycle ratio

A (N = 28)	B (N=10)
2014 136 days	2014 129 days
2015 136 days	2015 132 days
2016 144 days	2016 134 days

Source: author's own study.

Tabela 3. Average results for receivables turnover rates in days.

Receivables rotation ratio in days	A (N = 28)			B (N = 10)			
	$\bar{x}$	Me	*s*	$\bar{x}$	Me	*s*	p
2014	69.4	72	22.3	59.7	64	14.8	0.2054
2015	69.9	75	22.1	57.4	62.5	19.5	0.0879
2016	73.3	74.5	23.1	57.9	62.5	20.5	0.0759

Source: author's own study.

Tabela 4. Average results for the liabilities rotation ratio in days.

Liabilities rotation ratio in days	A (N = 28)			B (N = 10)			
	$\bar{x}$	Me	*s*	$\bar{x}$	Me	*s*	p
2014	64.7	65.0	38.5	49.1	49.0	11.5	0.3505
2015	63.9	61.5	34.6	45.5	43.5	18.0	0.2304
2016	67.0	67.0	36.0	57.5	55.5	18.4	0.5901

Source: author's own study.

Tabela 5. Average results for the inventory turnover ratio in days

Inventory rotation ratio in days	A (N = 28)			B (N = 10)			
	$\bar{x}$	Me	*s*	$\bar{x}$	Me	*s*	p
2014	66.4	62.0	18.0	68.9	70.0	14.8	0.5456
2015	66.0	60.5	17.3	74.2	70.0	19.5	0.4040
2016	70.7	68.5	18.1	76.6	68.0	20.5	0.6360

Source: author's own study.

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Managers' decisions and strategic actions of enterprises in Poland in the face of digital transformation

JEL Classification: *M15; M21; O32*

Keywords: *management; enterprise; digitalization; transformation; virtualiztion*

Abstract

Research background: Digitalisation as a continuous process of convergence of the real and virtual worlds is becoming the main driving force for innovations and changes in most sectors of the economy. What is especially important is that current changes are radical, and in some cases even disruptive, bringing completely different values to market players and consumers. In order to cope with these changes, individual enterprises and whole sectors, public administration, society and national economies need to undertake digital transformation.
Purpose of the article: The aim of the article is to indicate areas of activity in which information technologies are most often implemented in enterprises in Poland as well as managers' strategic approach to this problem in the face of digital transformation.
Methods: In order to assess the degree of enterprises' engagement in the process of implementing modern information technologies, a survey was conducted. The survey questionnaire consisted of a dozen questions concerning the perception of the issue of digital transformation and its inclusion into key strategic and organisational documents, enterprises' readiness to implement modern technologies, organisational culture, ICT use and achieved effectiveness.
Findings & Value added: Digitalisation of the economy and society is one of the most dynamic changes of our times, opening up new opportunities to create business models, while bringing uncertainty and various threats connected, among other things, with social consequences of the automation of production processes and security in a broad sense. The paper presents the level of Polish enterprises' engagement in the process of digital transformation and shows how the progress in terms of implementation of modern ICT.

Introduction

Digitalisation as a continuous process of convergence of the real and virtual worlds is becoming the main driving force for innovations and changes in most sectors of the economy. What is especially important is that current changes are radical, and in some cases even disruptive, bringing completely different values to market players and consumers. In order to cope with these changes, individual enterprises and whole sectors, public administration, society and national economies need to undertake digital transformation.

The aim of the article is to indicate areas of activity in which information technologies are most often implemented in enterprises in Poland as well as managers' strategic approach to this problem in the face of digital transformation.

Research methodology

In 2012, the author conducted research among enterprises in Poland to assess the advancement level of digitalisation (level of virtualisation of contacts with customers, cooperation with suppliers and knowledge management) in this country.

Studies have been conducted using a survey questionnaire carried out among enterprises in Poland. A total of 346 enterprises participated in the study, including 143 micro enterprises, 104 small enterprises, 48 medium-sized enterprises and 51 large enterprises;

Including:

- 245 service enterprises and 101 manufacturing enterprises;
- 318 privately owned, 9 state-owned, 11 cooperative, and 4 employee ownership enterprises;
- 61.2% - self-employed economic activity; 22.8% – capital companies, including 28 joint-stock companies and 51 private limited companies.; 4.6% partnerships
- 60.1% enterprises operating 5 to 15 years; 5.2% – up to 1 year; 33.8 % - over 15 years, of which 24 (6.9%) operating over 30 years.

The findings of the research were confronted with the research conducted by PwC five years later (in 2017) on a much larger group of enterprises. The research was carried out among 2000 people employed in 9 different sectors of the economy in 26 countries, including Poland. The survey addressed the challenges and chances of the fourth industrial revolution. The

comparative analysis only takes into account the findings related to enterprises in Poland.

Results

Polish entrepreneurs view the chances of Industry 4.0 very optimistically. Respondents rated the level of advancement of digital transformation in their enterprises very high, both compared to their direct competitors and enterprises from other countries. However, it is very likely that the participants of the survey were not fully familiar with the latest solutions used worldwide. A significant share of Polish companies are still at the stage of automating single workstations rather than creating ecosystems of devices that cooperate with one another without the participation of a human being (which characterises Industry 4.0). Based on the findings of the 2012 survey of Polish enterprises, it should be noted that most respondents now perceive the development in recent years as a huge leap and complex changes. A lot of Polish companies do not establish long-term strategies, but rather focus on fast and easy-to-introduce changes aimed at increasing production efficiency or cutting costs. Only those enterprises that are technologically more advanced implement elements of Industry 4.0. The main obstacles that hinder a deeper digitalisation-related metamorphosis are high costs of its adoption and lack of necessary infrastructure (e.g. not enough broadband connections)

However, the detailed findings of the research confirm huge optimism among Polish respondents. In each of the areas researched, the Polish results were better than the global average and much better than the 2012 research. This may have been a result of the accelerated development of Polish enterprises in recent years, often confused with full digital transformation. At the same time, as many as 39% of respondents indicated that compared to their main competitors their enterprises were technologically advanced or highly advanced. 45% claimed that their companies were at the same level of virtualisation as their main competitors. In the 2017 survey, 54% of those surveyed declared that data played an important role in the decision-making process in their companies. Within the next 5 years, this share will increase to 87%. These results are close to global ones, which are 50% and 83% respectively. The next five years will be a period of a significant increase in investment outlays. In the last two years, they constituted 5.7% of companies' annual revenues on average, but they are expected to increase to 7.7% by 2020, which will translate into spendings of over PLN 100 billion annually. However as many as 83% of respondents

were convinced that they would make a return on investment within five years maximum.

Which areas do Polish enterprises want to develop? 29% of respondents claimed that their organisations were going to use digital technologies to modify the existing range of products, while 27% declared that their companies wished to add new, innovative products to their offers. The same share declared investments in data analytics services provided to other enterprises. However, full implementation of Industry 4.0 solutions will not be easy. For domestic companies, the biggest challenge may be securing the necessary financial resources. Another problem will be lack of support for employees from the managerial staff or a clear vision of how the changes should take place.

Last but not least, in many cases it will not be possible to tighten cooperation with business partners due to their organisational and technological immaturity. It is worth noting that the ranking of challenges that was created with the help of the participants of the global research differs somewhat from the one created based on the responses provided by Polish entrepreneurs. For most companies worldwide, the fundamental issue was the necessity of transforming organisational culture and appropriate trainings for employees. In Poland, only every fourth respondent considered it to be a huge problem.

Despite these difficulties, it is safe to say that the representatives of Polish companies are very optimistic about the future and expect that the next steps they will take in the process of digital transformation will bring measurable benefits - mainly connected with efficiency. As many as 34% of respondents expect that it will improve by over 30%, whereas 40% expect that it will increase by 11% to 30%. According to 22% of those surveyed, the changes that are currently being introduced will contribute to over 30% reduction in costs, whereas 20% expect the same increase in revenues.

Conclusions

New business models are often based on generation of additional revenues through offering services in the area of data analytics or development of platforms. Additionally, they focus on optimisation of interactions with customers. The basic assumption is also offering comprehensive solutions in a specific digital ecosystem.

The deployment of Industry 4.0 solutions, and the implementation and successful use of new technologies represent a very complex and time-

consuming process. Of fundamental importance is to create a strategy connected with digital transformation.

In order to develop it, it is necessary to determine how technologically advanced an organisation is and to set priorities for the next five years. A common mistake is to make necessary changes through the existing silo structure of a company. Meanwhile, the metamorphosis will only be successful if a holistic approach is taken making it possible to identify and use the strengths of an organisation as the foundations on which a comprehensive reorganisation will be based. It is also important to identify which systems functioning in an organisation can be used and integrated in the future with new solutions. In the critical period of transformation, of fundamental importance is clear leadership, and equally important is commitment of all stakeholders, who will be engaged in the entire process and implementation of changes. It is thus important for everybody to know their role and for the objectives to be cascaded to further levels.

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