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Felelős szerkesztők:

**Veresné prof. dr. Somosi Mariann
Dr. Lipták Katalin**

**Miskolci Egyetem
Gazdaságtudományi Kar
H-3515 Miskolc-Egyetemváros
<http://gtk.uni-miskolc.hu>**

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INFLUENCING FACTORS OF THE STRATEGY CONCERNING CORPORATE SOCIAL RESPONSIBILITY

Tamás, Bakó

University of Miskolc, Institute of Management Science
szvbako@uni-miskolc.hu

ABSTRACT

Company decision-makers from one side increasingly have to confront with the expectations of their closer or extended community, also that of their environment in connection with the consequences of their business-decisions. From the other side they must represent the interests of their proprietors and must also sustain profitable economy. The author reviews those factors, which have a significant impact on socially responsible strategy-making process, concerning the decision-makers, the company and the outer environment. The author answers the question, what are the specialities of such decisions and in what direction goes the attitude of economic entities, concerning socially responsible operation.

Keywords: *Corporate social responsibility, CSR, decision-making, strategy, sustainable economic development*

Social responsibility of the companies is one of the most researched and mentioned topic during the last decade. Despite of that, or even for this reason, analysts of the question share a nearly unified position in one thing: Corporate Social Responsibility (CSR) has no generally agreed definition. With no claim of being exhaustive I refer to some, that - according to my opinion – reflects in general the substance of CSR in an exact way. According to David Vogel, CSR means „practices that improve the workplace and benefit society in ways that go above and beyond what companies are legally required to do.” (Vogel 2006, p. 2). In Ligeti’s eye „The basis for long-term and sustainable business is the harmonization between the aspects of naked profit and the outside world. In this way environmental sustainability and CSR are equivalent with business profit.” (Ligeti, 2008, p. 90) Last but not least in his excellent resumé writes this of CSR: „Corporate social responsibility means an active participation in resolving the problems of the society in that way, that this process must not be a burden to the given organization, causing dysfunctions for it.” (Angyal, 2009, p. 188)

According to the Oxford Handbook (Crane et al. 2008) associate conceptions like corporate citizenship, corporate responsibility or sustainable business are actually just alternative terms. Company social responsibility is also closely related to the issue of sustainable development, as we can see that in the following definition for CSR by World Business Council for Sustainable Development (Holliday et al. 2002, p. 103): the commitment of business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve their quality of life”.

Ádám Angyal in his above mentioned book (Angyal, 2009) goes so far as to view the paradigm of the model of socially responsible company as an axiom. According to him CSR is „such a principle in economic science, that cannot be verified by usual logical instruments and cannot be deducted from the standards of classic economic activities. At the same time it is an indisputable reality, it’s influence is powerful and this fact overwrites any kind of doubt concerning it’s existence or reason.” (Angyal, 2009, p. 121) In American literature, distinct from phrasing in European publications, corporate social responsibility (mainly its public

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appearance) is willingly called philanthropy or cause-related marketing (CRM) (Berglind-Nakata, 2005).

There is an academic debate with regard to social responsibility about the question, whether volunteering should be included into its definition or not. Some, as for example Ligeti, (2007) say that responsible behaviour means a voluntary activity and even go so far as Kotler and Lee (2007), saying, that voluntariness is the key-word and an essential component of responsible behaviour. Ádám Angyal (2009) and others (Kun, 2008) are in favour of a law-abiding behaviour and an environmentally conscious leadership – that represent an integral part of socially responsible corporate behaviour – arise also from binding outer norms and for this reason they are not exclusively voluntary expressions of responsible behaviour. In my opinion the motives, underlying CSR are in any case some kind of pressure or sanction (either from the proprietors' part or legal, even political) and for this reason volunteering is not a precondition required by any kind of corporate social responsibility.

Socially responsible corporate behaviour is interpreted as a learning process (Angyal, 2009), acquired incrementally in the frame of organizational learning as a multi-stage development course. Consequently, CSR is ideally a continuous, collective learning process (Zwetsloot, 2003). Some scholars distinguish different levels of social responsibility, and consider that as a similar process of a toddlers' growing up to a responsible adult (Goodpaster, 2007). Organizational learning also means changes of competencies, consequently it is a process of change, on the one hand resisted by the organization and on the other hand it conforms itself to and develops by that. So CSR can be learned and when the company starts, usually it is not visible, it evolves incrementally. In this regard I am of the opposite opinion to Zsuzsanna Györi, who holds the position that the truly responsible company acts in a responsible way from its establishment. (Györi, 2010).

Social responsibility is visible actually in the decisions of the company, consequently it is a decision-making process, what is the most important activity done by the management. Within this category responsible behaviour is an expression of the area of strategic leadership (Angyal, 2009). Decision-making at a given situation means choosing from the alternatives. „The role of strategic decision-making however, to define the targets, resources and policy of the organization”. (Somosi, 2004, p. 9)

In doing so the organization and its environment must be co-ordinated and forecasts should be made concerning their future and relation. (Somosi, 2004)

Decision-making related to different organizational levels can be operative control, knowledge-level decision-making, management-control or strategic decision-making (Zoltayné, 2002). CSR requires strategic-level decisions and attached to the limited group of senior management (Somosi, 2004). Such kind of decisions are called ill-structured by Herbert Simon, that is problems and decisions which cannot be programmed or routinized. (Simon, 1982) Decisions in connection with CSR require strategic level, they take place in the sphere of senior management, include ill-structured decisions that cannot be routinized, and made in a complex, heuristic, intuitive way. The risk-level of these decisions is high.

The relation of CSR is important to the core-competencies of the company. They are those competencies that become the resources of the competitive advantages for the company. It is a long and permanent trend in the course of the company-integration process, that those activities, which generate weaknesses and disadvantages for themselves, are outsourced, and the resources, released by that, could be used for further enhancing of those activities, which are their strengths and which makes them profit in the most significant and most stable way (Grant, 2016). These two trends, namely the demand for CSR and the claim for strengthening the core-competencies, work against each other permanently, particularly in times of crises.

The socially responsible attitude of the company could be seen in the long term as a kind of strategic investment, investing into the future that has (also) specific economic benefits. It could

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be such a winning situation, that could have benefits also for the company, for its' environment and for the society. (Kun, 2004) The most important factor is still remains the company, because it's existence is a condition of vital importance for any kind of CSR activities. So the question finally is that whether the socially responsible behaviour is a good business for the company, and do they have any kind of business interest in doing so, i.e. motivation is an unavoidable factor, concerning CSR. So it is important that the company behaves in a socially responsible way on the basis of real beliefs, or nothing but profit-interests or obtaining practical benefits are the only reasons for this kind of behaviour. (Győri, 2010)

There is no clear consensus accepted by researchers according to the above mentioned questions. Vogel, who was referred to earlier, mentions three different standpoints: first is Friedman's, who considers CSR dangerous, because it can be resulted in deduction of resources concerning core-competencies, so decreases market-efficiency. Second is Bakan's viewpoint, according to that CSR is only a mask, assumed by corporations only because of the expectations of the society and the third is Hollander's position, who says that CSR is the future of business. Hopkins goes further saying, that CSR will not only become the future, but also a major requirement of the business (Vogel, 2006).

We can see very interesting results in a research, done in Roumania, in 2017. According to that the CSR activities of the managers there motivated first of all by legal imperatives and secondly by getting and retaining talented employees. A key area of CSR activities is the workplace and the working environment, followed by the marketplace (where they sell things), the environment and the local community (Gorski, 2017).

Company-size is a decisive factor, concerning social responsibility. Smaller enterprises haven't heard of that too much –at least in Eastern-Europe – they do not know anything about such activities of their competitors, they have no action-plans or databases in connection with CSR, only a confidential one at best. The bigger are they, the more this situation changes (Bakos, 2014).

A recent research in connection with Hungary comes to the conclusion, that the overall level of environmentally conscious behaviour is low in our country, and it also can be said, that those who do not lead an environmentally conscious life, thinks of themselves more environmentally conscious as they really are. That means their self-esteem is significantly better than the actual situation. (Nagy Sz., 2018)

Of course, the most important factor concerning CSR is the manager himself, the leader. The effective implementation of CSR and practical application of it's principles cannot be achieved without the ethical and responsible attitude and behaviour from the managers' side. Managers, having such a mindset, serve as an example for the whole organization because of their ethical management style and moral strength. By encouraging and supporting similar qualities in connection with their employees, they create the basis for effective CSR-practices (Remisová and Lasáková, 2013).

Since CSR is a strategic question, and in strategy-forming senior management has an important role, including the CEO, his management-style has a significant effect on CSR. David Waldman and his colleagues highlight that charismatic and transforming leadership styles in addition the intellectually inspiring leader have a significant effect on actions done by the company and also on its' strategy and decisions in connection with CSR. Naturally, strategic decisions are influenced also by the Board of Directors, in addition division-level managers has also an effect on that, for this reason it is important to explore their attitude in connection with CSR-related company-activities and decisions (Waldman et al., 2014).

It should be noted, that those companies are the most succesful regarding CSR, where the decision-making process in connection with CSR goes in the context of well-articulated frameworks, CEO regularly gives reports on the results in the course of his communication with stakeholders (for example with shareholders), the results are made measurable and they publish

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periodical reports concerning CSR. In this way CSR becomes part of company-culture, being permanently integrated into that. It is important to emphasize the role of HR departments concerning CSR, because they have a decisive responsibility in selecting, employing and training managers. By means of regular and purposefully integrated trainings the number of CSR-conscious managers could be increased and this has an impact on the employees as a whole in connection with CSR. (Petulia Blake <https://www.ufhrd.co.uk/wordpress/wp-content/uploads/2012/11/UFHRD2012Sust2.pdf>)

It demonstrates the more and more significant role of CSR, that consulting and head-hunter firms in case of selecting senior managers generally propose the assessment of CSR-consciousness and to respect the results. For example, Strandberg Consulting, which is a Canadian consulting company in its introductory brochure, submitted to companies gives six reasons for why it is important to include CSR-conscious attitude into the criteria of management selection. These six criteria are: effective CSR implementation; brand and reputation management; employee attraction, retention and engagement; changing CSR requirements; CEO, as public face and better decisions.

According to Strandberg, for the selection of such managers they have to possess such leadership-factors, like value-centricism; external awareness; should be a good CSR-strategist and change manager; should collaborate with stakeholders; should be a catalyst and advocate of CSR, and last but not least should develop responsible leaders. (Strandberg Consulting, 2015 january newsletter <http://corostrandberg.com/wp-content/uploads/2015/01/ceo-csr-criteria-in-recruitment-and-succession-planning.pdf>)

Based on the above, it could be considered as a verified fact, that the decision-making process in connection with CSR is closely related to the attitude, leadership-style and personal views on social responsibility of the decision-maker.

Exceedingly interesting is the research, done by David Amisano concerning the attitude of the managers of small enterprises (in the United States they are those companies, which employ less, than hundred workers) in connection with CSR and ethical decision-making. His basic assumption was, that managers of small enterprises are neither interested in CSR, nor in business ethics, if the survival of their enterprise is the question and CSR could play a role only secondary of importance in their business-decisions. The author himself had got a small enterprise, consequently he based his assumptions unto practical experiences. However, the results showed indeed, that the managers of small enterprises do care for sustainability and ethics and do understand, that the activities of their own enterprises have a real influence on these factors locally, in their own community. It is also important for them how do they renown by members and leaders of the local community. However, it needs a continuous training and communication with the managers of small enterprises to have a better understanding and acceptance of the importance of CSR by them. (Amisano, 2017)

Consequently, company-size influences whether CSR is taken into account during the decision-making process of the company. Large corporations have well worked-out processes, schemes and regular reports in connection with CSR-activities: indicators, that can be evaluated in an acceptable way, periodical accounts and communication with stakeholders.

However, there is a significant discrepancy, depending on geographical location concerning CSR-consciousness of the small enterprises, because – contrary to the United States – in Central and Eastern Europe CSR has only some faint indications as an influencing factor on the decision making process of small enterprises. In this region survival of the firm and it's profitability are the decisive factors.

Based on the above we can also see, that national culture is an influencing factor, too, because the attitude of the people toward CSR in China differs from that of Mexico or in Central and Eastern Europe.

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Social structure and the involvement of the state are also important factors concerning CSR. In democratic, welfare-states, like Norway the state is the primal initiator of those activities done by corporations based on an influenced by CSR. Legislation to a large extent defines as an obligatory rule for the companies to act in an ethical and responsible way in the course of their profit-making. So in many cases CSR from the companies' side means a law-abiding behaviour. Traditional national values, as far as they are based on looking for a consensus among the different interest-groups and on regular consultation amongst the organizations of the employees, the employers and the government, in many ways implicitly involve those principles and practices that are only represented and emphasized by CSR in an explicit form (Segrov, 2014).

The theory of corporate social responsibility is rooted in anglo-saxon base, where philanthropy has a powerful tradition. In such a country like Norway, this must be „translated” into methods and proceedings used by Norwegian society, because for example philanthropy is not an activity, that becomes a daily reality, for the state itself is philanthroph per se. Company-structure also influences the appearance of CSR in an explicit form, as if small and middle-size enterprises are characteristic, then due to their asstes both leadership-style and profit-making activity are reflected in different organizational frameworks in comparison to the anglo-saxon economies, where we can see much more big enterprises and multinational corporations (Segrov, 2014). As a consequence decision-making process is strongly affected by social structure, national traditions and company-mix, even by leadership-style, created by these factors. Segrov, who were just mentioned demonstrates, that there exists a leadership-style, which is peculiar to Norway and differs from the American one (too). (Segrov, *ibid*).

CSR and sustainable development are more and more taken into account by customers in connection with their various decisions, even in those fields of activity, like attendance in music festivals. This means, that the decision-makers of those, who organize such kind of festivals have to take into consideration those factors, that have an impact on the enviroment and connected to these festivals, because participants take that into their accounts, deciding on ticket-purchasing. There is a similar situation in other areas of tourism, but even more factors come to the front concerning customer-preferences (for example social factors), influencing the decision-makers of touristic enterprises as well. (Alzghoul, 2017)

According to Goodpaster responsible decision-making is the combination of reason and respect, shown toward stakeholders. In the course of responsible decision-making it is necessary to review the alternatives in a non-consequentialist way. The possibility for that is given by ethical norms. That kind of approach, which observes to meeting the demands of such norms is called deontologic approach. In case of such a review the value of a certain alternative is not determined by the consequences resulted in the real world but exclusively by the fact, weather it does meet the ethical norms or does not. In case of responsible decision-making we have to take into account three decision-variables. Alternatives have a deontologic value, an instrumental value and an external value, representing the impact on stakeholders (Zsolnai, 1998). Decisions, taking into account social responsibility are such kind of decisions, where the process-model can be summarized in the following: to make clear targets, to identify relevant norms, mapping of stakeholders, simultaneous assessment of each alternatives with respect to norms, stakeholders and achieving the objectives, finally to choose the least bad alternative in the multi-dimensional decision-making square. How „good” this alternative is determined by the norms, the targets of the decision-making process and the convergence of the stakeholders (Zsolnai, 1998).

SUMMARY

Corporate social responsibility (CSR in short form) appears in a growing and broadening measure in the activities of corporations and business entities from one side as an expectation in connection with their courses, from the other side as such a factor, if failing, can make long-term competitiveness worse. Decisions, in connection with CSR are strategic-level decisions, for this reason they are made at the senior level. The personality, leadership-style and self-assessment of the decision-maker plays a decisive role in the process of how the outer expectations for CSR influence organizational decisions. Moreover, company-size, regional location, the surrounding national culture, social system and tradition also have a significant effect on socially responsible decision-making. Volunteering, that we can interpret partially as philanthropy and legal pressure has both an impact on CSR and predominate in the ratio of these two factors. The process could be described by a model, containing three decision-variables.

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TRUST AND COMPETENCE – RELATIONAL CONDITIONS OF ADVICE-SEEKING IN ORGANIZATIONAL SOCIAL NETWORKS*

Máté, Baksa

PhD student, Corvinus University of Budapest, H-1093 Budapest, Fővám tér 8.
mate.baksa@uni-corvinus.hu

SUMMARY

The revolutionary advancement of technology brought the attention of academics and management practitioners to the innovative capability of organizations in the past decade. Companies in knowledge-based industries increasingly focus on their ability of self-renewal and adaptation. Simultaneously, the amassment, management, sharing, and employment of knowledge have grown in importance. Codification of knowledge is an efficient way, although not always viable, to make it accessible to many employees. Tacit or hidden knowledge, however, spreads only through employee interactions, while it also plays an essential role in most organizations. Organizational network analysis, an established diagnostic tool in consulting practice, provides the apparatus to explore knowledge networks in organizations. What are the conditions of advice-seeking and knowledge-sharing in organizational social networks? What are the relational prerequisites of asking for help? In this paper, I present the knowledge network analysis of a small Hungarian based knowledge-intensive company.

1. INTRODUCTION

The ever-fiercer global competition has attracted the attention of management researchers and practitioners to the innovative capability of organizations. Researchers argue that prerequisites of innovation changed in the past decades: new intellectual contents emerge from collaboration and collective contemplation of people with different knowledge and background (Cheng et al., 2019; Faraj & Wasko, 2015). This marks a significant move from the conventional images of lonely polymaths of the age of Renaissance or the systematic but still solitary scientists of the age of Enlightenment. Nowadays, cooperating teams and *networks* whose members share their knowledge lead the way to innovation (Sára et al., 2014).

The broad concept of knowledge management includes organizational processes that aim to reach strategic objectives through the efficient use and provision of knowledge at the right time and at the right place (Qureshi et al., 2018). This definition encompasses activities related to (1) creation or construction of knowledge; (2) storage and retrieval of knowledge; (3) transfer, and (4) application of knowledge (Alavi & Leidner, 2001; García-Sánchez, García-Morales, & Bolívar-Ramos, 2017). Knowledge-sharing is a type of knowledge transfer in which individuals pass on knowledge, experience, or other work-related informational content to co-workers (Stenius et al., 2017).

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Knowledge-sharing has a positive effect on organizational performance (Quigley et al., 2007). Those companies that motivate their employees to share their knowledge tend to create more innovations concerning their products or procedures than those who do not (Ahmed et al., 2018). The transfer of tacit knowledge may also contribute to the improvement of key-competences and competitiveness of companies (Cheng et al., 2019). This is also true for individual achievements: according to Quigley et al. (2007), employees provide the best performance if knowledge and information owners assist their efforts.

1.1. A network perspective of knowledge-sharing and advice-seeking

Network studies examine complex systems of various kinds. The network perspective of organizational knowledge-sharing and advice-seeking offers a unique approach to analyze connections between employees and information content that flows through them. Knowledge networks are interconnected systems of actors who aim to share knowledge and generate new knowledge through a combination of knowledge elements (Škerlavaj, Dimovski, & Desouza, 2010; Tortoriello, Reagans, & Mcevily, 2012). Researchers of this field examine different knowledge networks at (1) interpersonal, (2) inter-group, and (3) inter-organizational levels (Csontos & Szabó, 2019; Phelps, Heidl, & Wadhwa, 2012). In this paper, I focus on interpersonal networks in which advice-seeking and knowledge-sharing occur.

Managing the knowledge necessary for their operation is essential for all organizations. Although, as it is the most critical tool of production in knowledge-intensive organizations (e.g., professional service providers and consultants), its proper use is a key-competence for competitiveness. In many cases, knowledge management systems fail: even if the required knowledge or information is present in the organization (possessed by some of the employees), it is not available at a given moment. Ambient awareness is the knowledge of who knows whom and who knows what (Leonardi, 2015). This meta-knowledge is vital to accessing critical information in an organization: the less formalized and codified a piece of knowledge is, the more likely ambient awareness is needed to retrieve it. Knowledge-sharing often occurs in informal relationships that remain in the blind spot of managers. A network perspective might help to explore these relationships that would otherwise be missed from organizational charts (Phelps et al., 2012).

From a network perspective, actors (nodes) in a knowledge or innovation network are members or other stakeholders of the organization, and relationships (ties) between them represent advice-seeking or collaboration. These directed or undirected connections transmit diverse flows of information and emotions (Borgatti, Brass, & Halgin, 2014). With the tools of organizational network analysis, researchers and consultants can examine and compare patterns of interpersonal interactions in organizational social networks (Vohra & Thomas, 2016). Actors in knowledge networks are (1) knowledge owners in possession of valuable intelligence, (2) intermediaries in knowledge transfer and (3) creators of new knowledge or innovation. Ties in a knowledge network also have multiple functions: these are (a) tools that help in the re-combination of knowledge elements (Škerlavaj et al., 2010), (b) channels in which information flows (Borgatti et al., 2014), and (3) filters that influence the perception of actors on each other's expertise.

Social networks are essential for the spread of innovations within a corporation, and network structures affect the way it happens. Network density and a central network position of source actors, for instance, might influence the speed of dissemination. Network experiments show that assuming gains from the transmission of knowledge (e.g., financial or emotional recognitions), it is not the inventors but the most successful disseminators who benefit the most (Takács, 2010). The more central position an actor occupies in an organizational social network, the more opportunity they get to collect and distribute pieces of information (Phelps et al.,

2012). The centrality of actors might be evaluated by a set of different measures (Robins, 2015). Degree centrality (in-degree centrality in case of directed networks) shows the number of people who ask a given actor for knowledge. Eigenvector centrality also takes into account the relative position of advice-seekers in the knowledge network: it assigns higher values to actors who share knowledge with other actors of high centrality.

1.2. Conditions and motives of advice-seeking

Actors in a knowledge network may choose to seek advice from former acquaintances or people they do not know personally but whom they perceive as experts or knowledge owners (Nebus, 2006). According to Borgatti & Cross (2003), the image you have about other people significantly affects your choice of target in an advice-seeking context. Thus, the visibility of expertise has a profound influence on knowledge-sharing requests. Seekers should be aware of typical organizational sites of knowledge creation and the location (i.e., knowledge owners) of specific knowledge elements they require.

Previous research shows that advice-seekers prefer turning to actors whom they deem sympathetic and accessible to those who have higher quality knowledge on a particular subject (Casciaro & Sousa Lobo, 2005). Casciaro & Lobo (2005) claim that personal relations and emotions weigh more than competence. They argue that network actors systematically avoid seeking advice from those colleagues they do not like, even if their expertise on a given subject is well-known and visible. The choice of knowledge source also depends on the specific content and the task it is related to. If the problem is well-structured and fully understood by the seeker, they might evaluate the necessary knowledge more efficiently and can choose more wisely (Nebus, 2006).

According to Borgatti & Cross (2003), advice-seeking behavior is usually the consequence of one or more of the five following motives. (1) Solution: a piece of information or knowledge that helps to resolve a task or answer a question. (2) Meta-knowledge: information on who knows what and who knows whom. (3) Re-definition of a problem: the seeker gains new perspectives that might help to reformulate their original problem. (4) Confirmation, reassurance: advice-seekers aim to reinforce their previous knowledge and gain self-confidence. (5) Legitimacy: the source of expertise legitimates the knowledge itself by his personality (e.g., position, public image). Borgatti & Cross (2003) also claim that anytime you contact another person, the most recent experience overwrites previous perceptions. Thus, the probability of future attempts on advice-seeking changes dynamically over time.

2. DATA AND METHODS

This paper aims to examine relational conditions of advice-seeking in an organizational knowledge network. Based on previous research findings in the relevant scientific literature, I analyzed actual advice-seeking relationships in the context of three other relationships: (1) sympathy, (2) trust, and (3) perceived expertise. I also compared network positions of actors to their standing in the formal hierarchy.

The empirical research was carried out in a Budapest-based management consultancy of multinational background. The company has been present in Hungary since the early 2000s and grew steadily in the past two decades. It is a knowledge-intensive organization as it uses and combines knowledge of its members to provide professional services for its customers. To safeguard its market position, the company needs to evolve and innovate continuously. In this research, we asked all 23 employees of the company, most of whom are junior or senior consultants, and partners. Respondents were asked to fill out a survey on their relevant social and advice-seeking relations, their opinion on the company's knowledge management practice,

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and their demographic data. Questionnaires were administered by Ms. Nikolett Báder, a B.A. student of Corvinus University of Budapest.

Organizational network analysis requires a relatively high response rate as it relies heavily on relational data. In our sample, 21 out of 23 employees filled out the questionnaire which means a 91 percent response rate. The survey included attitude questions (on a 6-grade Likert-scale) on knowledge management practice and relational questions concerning the examined factors:

- a. Whom do you like to meet outside the workplace? (Sympathy)
- b. Whom do you turn to if you need to discuss personal problems? (Trust)
- c. Which of your colleagues stand out with their expertise? (Competence)
- d. Whom do you turn to for knowledge or advice related to your work (Advice-seeking)

Although recorded survey responses contain data that might support an in-depth analysis of the company examined, in this paper, I focus only on the correlation and interdependence of sympathy, trust, and perceived competence on actual advice-seeking relationships. I analyzed data by UCINET, a network research tool (Borgatti et al., 2002) and SPSS 25, an instrument of statistical analysis. *Table 1* summarizes the demographic data (age and position) of respondents.

Table 1 Demographic data of respondents (Source: own design)

		Count			
		Position			Total
		Intern	Junior	Senior	
Age	<25	1	0	0	1
	25-30	2	7	1	10
	31-35	0	0	2	2
	36-40	0	0	7	7
	41-45	0	0	1	1
Total		3	7	11	21

To examine the influence of sympathy, trust, and perceived competence relationships on advice-seeking, I selected the latter one as dependent and the others as independent variables. Adjacency matrices of the relationship graphs contain 0 or 1 values meaning that a given $A_{i,j}$ relationship exists (1) or not (0). All networks include directed ties (i.e., relationships are not automatically reciprocal), hence the matrices are asymmetric. Actors could not choose themselves; thus, we might ignore the 0 values of the main diagonal. The theoretical maximum of relationships is 506; however, as respondents could choose four other actors at most, their actual maximum number is 92. I analyzed connections between different relationship types by binary logistic regression in the SPSS 25 statistics software.

3. FINDINGS

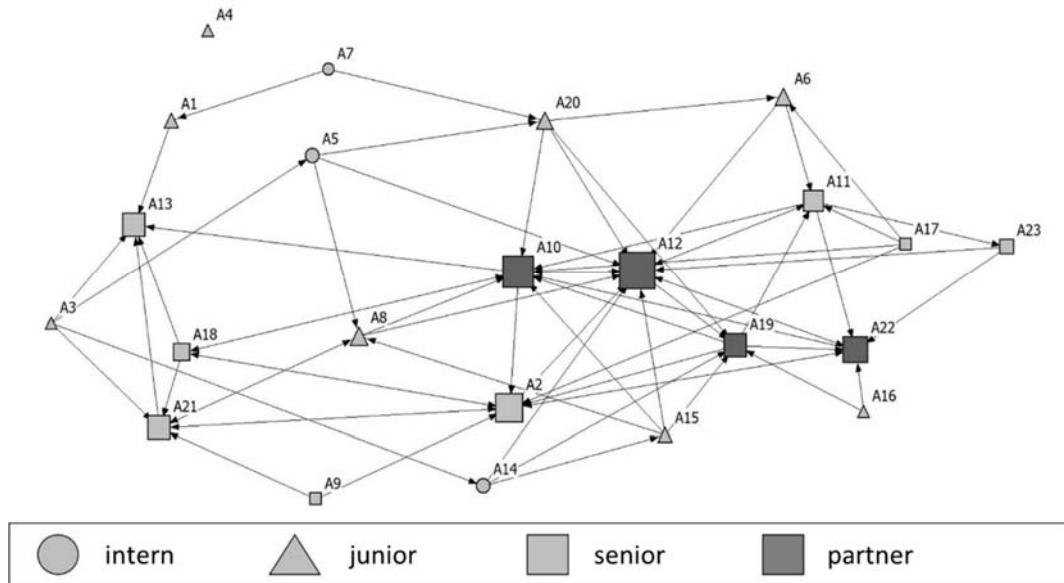
The advice-seeking network of the examined organization includes actors (interns, junior and senior consultants, and managing partners) and relationships among them. *Figure 1* shows the graph mapping of the network. Shape and color of nodes sign position in the formal hierarchy, while arrowheads indicate the direction of the relationship (two-headed arrows mean mutual choices of respondents). Node size refers to in-degree centrality values: the more incoming ties a node has, the larger it is on the figure.

Figure 1 shows that apart from one actor (A4) all other employees ask for or provide knowledge to at least two different people. The network center and periphery are visibly separated. Senior

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consultants and managing partners are generally more popular, with multiple incoming requests for knowledge, while most interns and juniors occupy a less dominant position in the network. A9 and A17 actors are exceptions, as despite being senior consultants, nobody chose them as sources of work-related information or knowledge. It seems that interns managed to get integrated into the knowledge network: two out of three ask for and also provide knowledge to others.

Figure 1 Advice-seeking network in the examined organization (Source: own design)



I examined the influence of three independent variables (sympathy, trust, and perceived competence) on advice-seeking relationship formation, the dependent variable in my regression model. The dependent variable in a binary logistic regression model can take two values; in this case 1 if the relationship exists and 0 if it does not. The resulting model has significant explanatory power ($\chi^2=141,580$; $p=0,000$; Nagelkerke $R^2=0,453$). The Hosmer-Lemeshow test result is not significant ($p=0,454$) which means that my model fits measured data. *Table 2* summarizes the influence and significance of the independent variables included in the model.

Table 2 Variables included in the statistical model (Source: own design)

Variables included in the binary logistic regression model						
	B	S.E.	Wald	df	Sig.	Exp(B)
Sympathy	-1,039	0,527	3,887	1	0,049	0,354
Trust	3,242	0,462	49,179	1	0,000	25,581
Perceived competence	2,452	0,353	48,332	1	0,000	11,615
Constant	-3,240	0,253	163,418	1	0,000	0,039

As reported in my results, it seems that sympathy ($p=0,049$), interpersonal trust ($p=0,000$), and perceived competence ($p=0,000$) all affect the formation of advice-seeking relationships. While trust and perceived competence increase the probability of tie formation in the advice seeking network, it seems that sympathy, strangely, reduces it. (The direction of influence on probability can be deduced from the negative or positive signs before B values and Exp(B) values smaller

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or higher than 1. As stated in *Table 2*, trust makes the probability of requests for work-related knowledge almost 26 times higher and perceived competence nearly 12 times higher.

4. CONCLUSIONS

In this paper, I examined the relational conditions of advice-seeking and knowledge-sharing, organizational phenomena that have increasing importance for the competitiveness of knowledge-intensive companies. I assumed that knowledge flows through interpersonal relationships among members of the organization. I also presumed that knowledge is, in part, generated by the recombination of various knowledge elements during employee interactions. Thus, in this paper, I argued for the usefulness of a network perspective in the analysis of knowledge management processes.

In my empirical research, I wished to explore the influence of different interpersonal relationships on advice-seeking behavior. My findings suggest that in the examined organization, it is mostly interpersonal trust and perceived competence that increase the probability of advice-seeking tie formation. Sympathy, on the other hand, seems to somewhat reduce the likelihood of asking for knowledge. The reason behind this might be the way we explored sympathy relationships. In the questionnaire, respondents were asked to list four people at most whom they like to meet outside the workplace. This question is frequently asked and validated in organizational network research. However, it seems to result in a selection of colleagues whom they feel close to themselves (i.e., they are fun, open, and easy to spend time with) but to whom they would not turn for professional knowledge. A pleasant company might not be the wisest, after all.

Generalizability of my findings is limited as I examined only one knowledge network, and organizational characteristics (e.g., size, industry, and level of fluctuation) probably influenced the outcome that might be different in another setting. When realized, knowledge-sharing changes trust and perception of expertise among actors, according to the dynamic model of Borgatti & Cross (2003). Hence, longitudinal research with a dynamic approach might be a reasonable continuation of this research. The exploration of other, non-relational, conditions of knowledge-sharing (e.g., personality traits, organizational context, or leadership styles) also seems to be fruitful. The goal of this paper was twofold. First, to bring attention to the usefulness of network perspective in the research on knowledge sharing. Second, to advise management practitioners to reinforce trust among their employees and increase the visibility of their expertise in order to boost advice-seeking and knowledge-sharing behavior.

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SYSTEMATIC LITERATURE RESEARCH ON DISABILITY-RELATED PUBLICATIONS IN HUNGARY FROM 1959 TO THE PRESENT

Beáta, Bihariné Kalászdi

PhD student, University of Miskolc, Institute of Marketing and Tourism
biharine.beata@uni-miskolc.hu

SUMMARY

There are many social problems in every human community, some of which are more prominent and others less prominent in public consciousness. One indicator of this is the number of scientific publications, as the more significant the social problem for the community is, the greater weight the topic has in the field of scientific research.

This research aims to analyze the subject of disability through systematic literature research by examining studies and articles published on the theme, to cover the main publishing trends on disability – whether the number of articles dealing with the topic grows, decreases or stagnates over time; which are the most typical aspects, from which researchers approach this multidisciplinary subject, and how the number of publications develops. The author also aims to find a link between her own research topic - social inclusion of people with disabilities in the light of social marketing models - and already published scientific literature.

1. INTRODUCTION

Nowadays, many social problems may be the subject of investigation. In my research topic I want to examine and analyze the social inclusion of people with disabilities in the light of social marketing models. This area is of great relevance as a significant part of the population is affected both in the European Union and in Hungary. Besides that it is an important fact that disability can occur in the lives of those who have spent a healthy early stage of their lives – because of accident, illness or old age.

According to the European Health and Social Integration Survey (EHSIS), in 2012 there were 70 million people with disabilities living in the European Union, over the age of 15. This represents 17.6% of the age group (ec.europa.eu). According to research findings the most affected socio-demographic groups by disability are: women, people over 65 years, people with lower education.

The circumstances of people with disabilities in Hungary was surveyed in the process of the micro-census survey in 2016, and the report was published by the Hungarian Central Statistical Office in 2018 (Micro-census, 2016). Based on this, more than 400,000 people in Hungary live with some form of disability.

As it can be seen from the statistics above, the topic has many direct stakeholders, not to mention other stakeholders (for example family members, educational, health care institutions, etc.)

The importance of our topic is also illustrated by the significant amount of published scientific literature on disability. The purpose of this research is to study the articles published on the subject and to determine what the main aspects are from which researchers approach this multidisciplinary topic.

2. RESEARCH QUESTIONS AND METHODOLOGY

The phenomenon of disability has existed since the beginning of mankind, but the attitude of the majority society has changed a great deal over time. While for many centuries the main attitude was rejecting the problem, isolating the disabled people and discriminating in every way possible, nowadays we are experiencing positive changes. Society is becoming more and more accepting towards „different” groups of people from several perspectives, which hopefully will make a positive change in the life of people with disabilities.

If a social problem or phenomenon is important to the society, it is also shown by the fact that it is emerging and gaining importance in the field of literature, arts and science. That is why I consider it important to systematically analyze and examine the scientific literature on disability in order to see how the number of scientific publications on this subject in Hungary changes over the years. In addition, I would also like to examine from which aspects the publications approach people with disabilities. The problem is complex, affecting many disciplines, so it may be interesting to explore which disciplines are over-represented and under-represented in this area. Furthermore, for my own research topic, social inclusion, it is important to explore publications that examine the situation of people with disabilities from this perspective, or other aspects that may be relevant to social inclusion.

Due to the large volume of scientific literature, I restricted my research to the database of the Hungarian Scientific Works (MTMT), examining the results written in Hungarian. During the investigation, I searched for the term „disabil” („fogyatékos”), which assumed the widest match, resulting 1662 records. The search was made on May 5th, 2019, so the results reflect the state at that time. After clearing the results and deleting the duplicates, 1641 publications remained in the database. I analyzed the data using Microsoft Excel software, to examine the descriptive statistical characteristics of the publications found.

3. RESULTS

I first grouped the 1641 articles by the year of publication. The first result in chronological order was published in 1959, so the research sample shows a wide time interval of 60 years. Typically, as we move backwards in time, we get fewer search results (presumably because the database was created in 2009, and publications from much earlier times were not completely uploaded). Search results of 2019 were left out from the analysis, as only one-third of the year has passed at the time of the research, so the 7 publications produced so far would distort the sample.

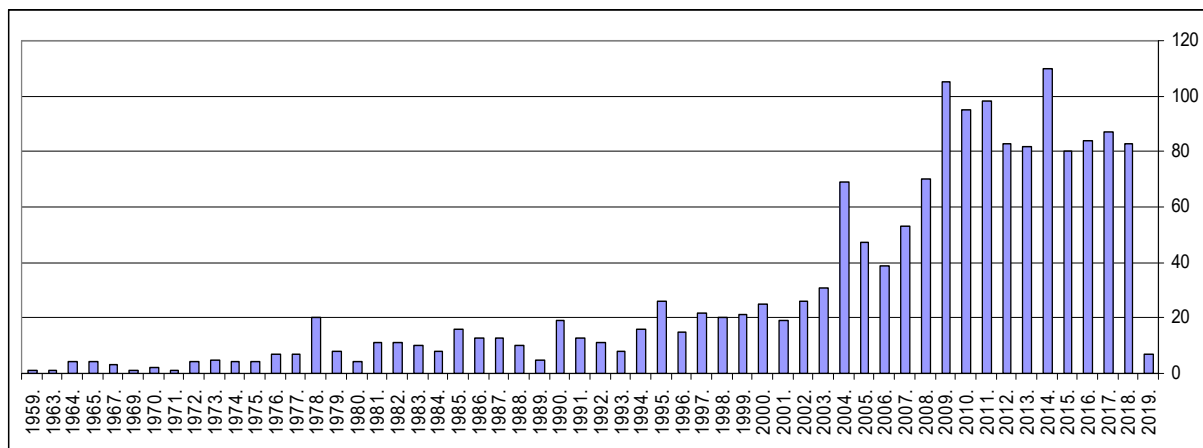


Figure 1. Annual breakdown of publications on disability (n = 1641), from 1959 to 2018
Own edition

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If we look at the temporal distribution, we see that, as shown in Figure 1, there is a significant increase in the number of publications on the topic during the examined time period.

Although the rate of growth is uneven, there are outstanding values (for example in 2004, in 2009 and in 2014) followed by declines, but in its order of magnitude there is definitely strong growth (1 result in 1959, 25 results in 2000, 83 results in 2018). If we look only at the interval since the introduction of MTMT, apart from the outstanding values of 2009 and 2014, the average number of items in other years is between 80 and 90.

Of all found items 517 publications were published in a journal. A total of 188 journals published articles on the subject, in varying amounts. I examined which journals had the highest proportion of publications on disability. Figure 2 presents the journals that published most of these articles during the period under review.

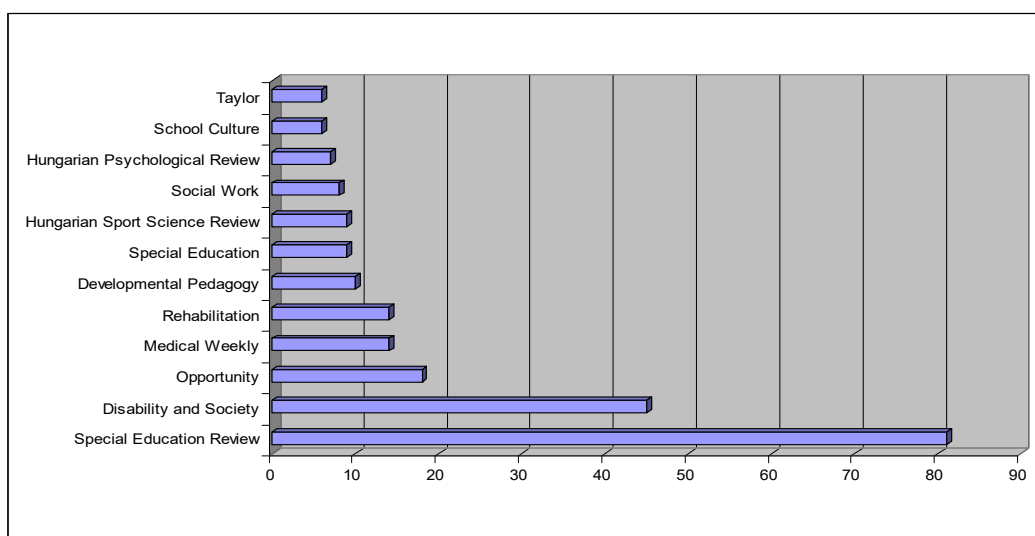


Figure 2. Journals with most publications on disability, from 1959 to 2018
Own edition

As shown in Figure 2, the journals Special Education Review (81) and the Disability and Society (45) have published exceptionally many articles on the subject. In the „middle field” we find the magazines Opportunity (18), Medical Weekly (14), Rehabilitation (14) and Developmental Pedagogy (10). We find 17 journals that have published more than 5 articles on disability in the period under review. 110 magazines published only 1 article on this subject in the investigated period.

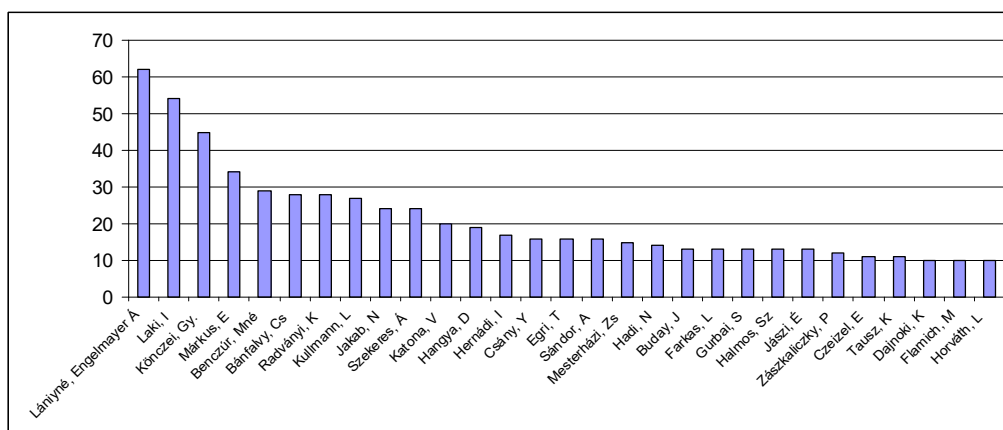


Figure 3. The most active authors in the investigated topic
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I also examined who the most active authors were in the topic. Dr. Ágnes Lányiné Engelmayer proved to be the most active author in this field, with 62 publications, we can find her articles throughout the whole period (1959-2018). Ildikó Laki has 54 publications in the topic, her articles can be found in the MTMT database since 2009. György Könczei published 45 works about disability from 1987 to 2018. Eszter Márkus has more than 30 publications on the subject. Figure 3. shows the authors who have more than 10 publications in the topic of disability.

Disability is a research subject for many scientific disciplines. Based on the titles of the publications received as a result, several areas and categories were outlined, so I categorized the results according to their perspective on disability. I created the following main categories:

- Law
- Society
- Economy
- Health care
- Pedagogy
- Sports
- Institutional care
- Employment
- Higher education
- Special education
- Arts
- Tourism
- Accessibility

I categorized the publications into the categories above by searching in the titles of the articles with Excel software, applying multiple search terms to each category. For example, I searched for „health”, „rehabil”, „therapy”, „heal”, „medical” to filter articles using the health care approach. Based on the information I received, I was able to categorize the articles into the categories above.

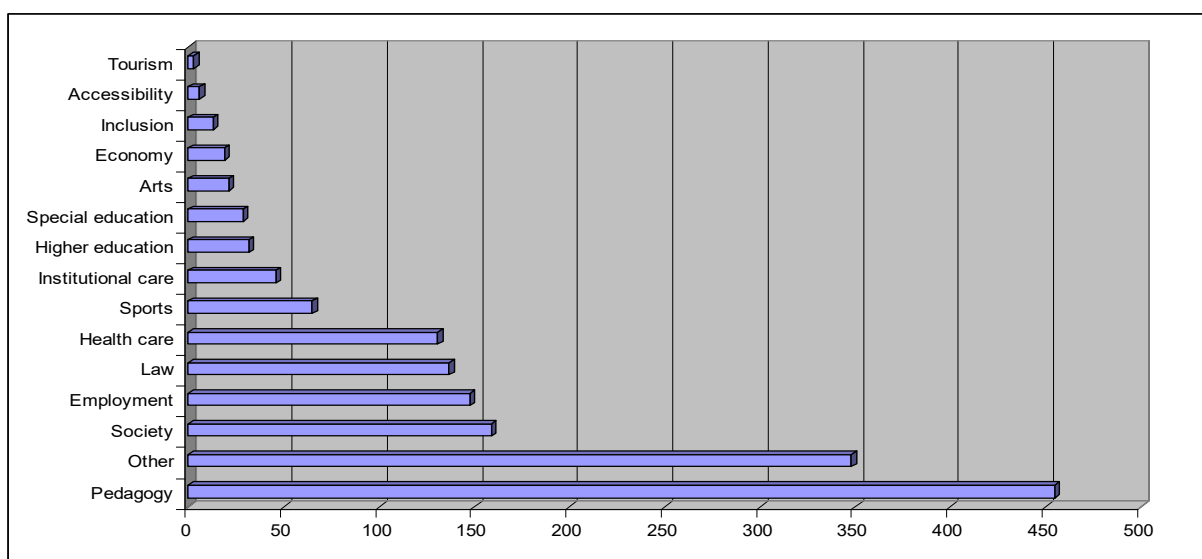


Figure 4. Categorization of publications on disability (n=1641)

Own edition

In many cases I received double or triple results. In these cases the articles required „manual” cleaning, so after studying the titles one by one, I had to decide in each case into which category the publication fits. This phase took a lot of time. However, due to the multidisciplinary nature of the topic, certain studies fall into several categories with equal relevance, so they remain in the plural categorization.

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There are 348 publications in the „Other” category, which dealt with specific topics or, on the contrary, were too general by their title (for example the situation of people with disabilities).

As shown in Figure 4, a significant proportion (455) of the publications deal with the issue of disability from a pedagogical perspective. Publications in this category study the education and school integration of children with disabilities. It is well-known that the education has a significant impact on the lives of people with disabilities, since it greatly determines their chances of integration and employment in their adult life.

Publications in the category „Society” play a key role in my research topic. There are also a large number of studies in this category (159). This category also includes the 13 articles found in the subject of „Inclusion”, which together are related to the topic of social inclusion which is also a relevant part of my research interest. I also did a separate search for the term „social inclusion”, which resulted in a total of 5 results. According to this it can be stated that the social inclusion of people with disabilities is a less-researched area so far.

Among the publications in the category „Employment”, we also find nearly 150 studies. This theme is also closely linked to the topic of social inclusion, since it is very important for the successful social integration of a person with a disability to be able to carry out activities that are useful for the society and thus to be financially independent.

The legal approach to disability is also high, with 137 of the publications dealing with this aspect. The legal approach may provide a framework for the subject I am investigating, but it does not show a close relationship with my research subject.

Health care-focused articles also show a similar magnitude (131). These publications mainly deal with the subject of disability from a medical point of view, so they can be used as background information for my further researches.

Sport has been the focus of 65 studies. The view that sport can improve the living conditions and the level of integration of people with disabilities is of great importance in the examined literature. At the beginning of the research, I did not expect sport to be a significant category, so it gave me new information that this area also has a great impact on the topic I was researching.

46 publications deal with the situation of people with disabilities living in an institution. This number is rather low compared to the approx. 15.000 people with disabilities living in residential institutions according to the Central Statistical Office Yearbook of Social Statistics (2017).

It was a surprising result for me that 32 studies specifically address the issue of disability in the field of higher education. Some of the publications in this category deal with the situation of students with disabilities, while others focus on the attitudes of healthy students and how to sensitize them. This category is also important for my research topic, as it also represents a possible direction of narrowing the subject.

Search for special needs education gave 31 results. Although the largest number of studies have been published in the Special Education Review, the number of publications with titles explicitly referring to the special education aspect is relatively small. At the same time, we have to take into account that pedagogical and special education results show a strong relationship with each other.

21 publications deal with the emergence of disability in art and the impact of art on people with disabilities, which has also drawn new perspectives.

From a purely economic point of view, only 19 publications deal with disability. At the same time, we must take into account the close relationship between the category „Employment” and the economic aspect.

The number of results on „Accessibility” and „Tourism” was the lowest (accessibility: 6, tourism: 3).

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The search for „Marketing” did not match any of the titles, which means that approaching the topic from this aspect represents a novelty.

I also examined the database to see whether the titles of the articles specifically refer to one type of disability and if so, which types are mentioned and how often. 72% of the 1641 publications examined uses a generic name (people with disabilities, children with disabilities, disability, etc.). 462 publications mention some type of disability in the title. We have to underline the over-representation of using „mentally handicapped” expression in the titles (in 69% of the articles containing concretisation, which means that in 320 cases we can find this type of disability in the titles). The frequency of the named disability types is shown in Figure 5.

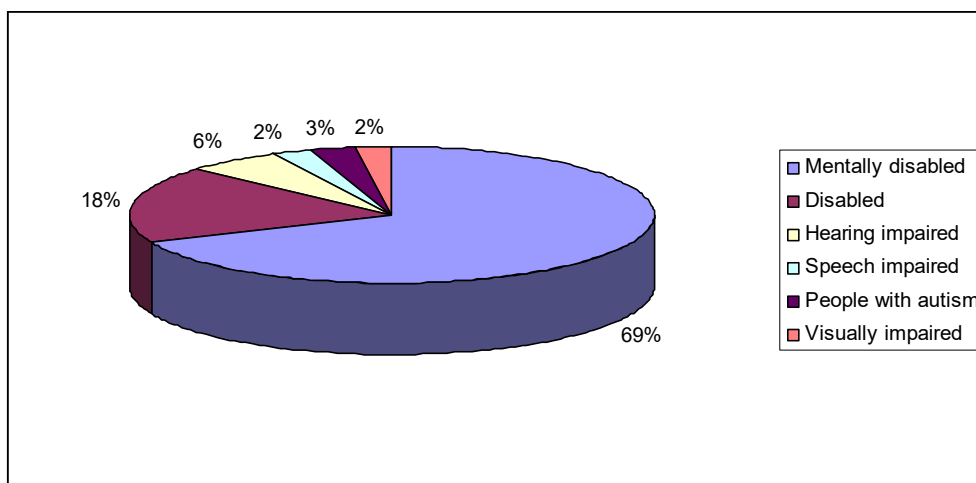


Figure 5. Distribution of publications specifying the type of disability according to the named disability type

Own edition

4. CONCLUSIONS, FURTHER INVESTIGATIONS

The purpose of the research described above was to explore the size and main statistical features of the Hungarian scientific literature on the topic of disability. People with disabilities are an important and large group in our society, so I think it is a relevant research subject to explore the importance of this topic in the scientific literature, since the more important a social problem to the community is, the greater weight the topic has in the field of scientific researches. My aim was, therefore, to examine the direction and extent to which the number of scientific works published in the field of disability has changed over the past decades and which focus the researches have.

The large number of publications (1641) found during the examined period (1959 - 2018) shows that disability is a relevant, well-researched and published area of the Hungarian scientific literature. Regarding the temporal distribution of the articles published on the topic, I found that there is a clearly increasing tendency, with some outstanding peaks. In the last decade we can find 80 – 90 publications in average per year.

Because of the multidisciplinary nature of the topic, I found it important to categorize the publications according to their perspective on disability. After completing the categorization, I found that most publications appeared in the „Pedagogy”, „Society”, „Employment”, „Law”, „Health care” categories. It is an important conclusion from the point of view of my further research that disability literature is still dominated by the traditional approaches of health care, pedagogy, special education, which calls attention to the need of the new approach of social marketing, which is an effective tool both in realising attitude formation, behavior change and

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establishing the necessary cooperation between the stakeholders of a problem. Based on my research, this approach does not appear in the published scientific literature so far.

I have identified several limitations of the research described. Unfortunately, I did not have access to article abstracts in the MTMT database, which narrowed the search to titles. Due to the large sample size (1641), it was not possible to look up the abstracts one by one from other databases.

Other limitations of the research also indicate further possible directions of the research. The search could be carried out in other databases (for example MATARKA) and the results could be compared, of course deleting the duplicates. It would also be relevant to search for other keywords, such as „impaired” („sérült”), which however also yields a very wide (over 1000) results and require significant cleaning of the sample, as many other non-disability-related injury articles also appear in it. It would also be possible to search for specific types of disability (for example „blind”, „visually impaired”, „hearing impaired”, „handicapped”, etc.). Only Hungarian results were included in this research, so an English search in the MTMT database could be done. In addition, there is an opportunity for further expansion if the research is carried out in foreign language databases (for example EBSCO, Researchgate, etc.).

However, these potential further researches are very time consuming and due to the large number of results, can be difficult to manage informatically, therefore a more limited research has been carried out according to current possibilities. The present study also provided useful information to illustrate the importance of the topic in the scientific literature and to identify new thoughts and directions for further research.

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QUALITY MANAGEMENT OF THE THREE-DIMENSIONAL EDUCATIONAL LEADERSHIP MODEL

Salma, Choulli

PhD student, Enterprise Theory and Practice Doctoral School, University of Miskolc
salma.choulli@gmail.com

SUMMARY

Leadership is a general principle. Finding the proper leadership style has long been of great interest to researchers. Various specialties worked out the own concepts and models. The three-dimensional model is one of the improvements in education. However, the model is based on business concepts, the new content may return useful additions. The paper presents the structure and the content of the three-dimensional model, as well as its relation to quality management. The focus points of students, participation and knowledge can be translated to employee, engagement and effectiveness. I consider the model as an initial framework of my PhD research.

1. INTRODUCTION

The leadership theories taught in Business Schools around the world have evolved significantly to meet the changing management challenges that integrate the complexity, skills, creativity, cultural resources of mobility and the ability to anticipate group expectations. However, each society has its own variety of leadership. The 21st century is the result of profound changes that have transfigured the relations of production, those of power and interpersonal bonds.

We are far from the time when the leadership situation was hierarchically conceived with a leader who decides and directs, and a group of followers who execute the orders.

Leadership is one of the 7 principles of quality management (ISO 9001:2015):

- Client orientation
- Leadership
- Staff involvement
- Process approach
- Improvement
- Evidence-based decision-making
- Relationship Management with Stakeholders.

ISO 9001:2015 standard refers to the term “quality management principle” as the notion of rule, theory or fundamental belief that has a major influence on how to implement a quality approach. Using these generally accepted principles may contribute to a better understanding within and between various organizations.

Modern management wants the leader to draw authority only from personal skills. Moreover, the network organization that characterizes contemporary society contributes greatly to the distribution of authority throughout the hierarchy.

The study will look into the model of educational leadership by using more specifically a three-dimensional grid. I believe that the framework can be used in a wider scope and the

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methodology designated by the three-dimensional model can be translated to quality management.

2. PEDAGOGICAL LEADERSHIP: THE THREE-DIMENSIONAL MODEL

In the entrepreneurial world of the consumer society, we generally take on the manager, because of his function and his position, as the responsible for the failure or “non-success” (commercial or otherwise). We point the figure often at the professor who did not know how to make his pupils succeed. Based on a Persian Achah saying, failure is not the defeat created by someone, it is the result of an interaction, i.e. that fruitless in the case of teaching, even if it is a little unfair to designate the teacher alone as faulty.

A person can sometimes have a stronger influential power which leads him to guide the group: called the leader. Yet, the leader is not literally necessarily the person designated by an institution (the manager).

As the “head” of the class, as a leader (at least in a formal way and institutionalized but ideally invested as such by its members), the teacher is made to make decisions; and that brings him closer more to management. Indeed, the teacher is above all according to Altet (1994) a decision-maker, because each pedagogical action is based on an interactive decision of the latter. Rey (1999) also goes in this sense when he specifies that in fact, the management of a course implies a “number infinite micro-decisions that need to be taken in an emergency and improvisation and find their source in the search for the attention of students and banishment of wasted time.

In terms of management style, the Blake-Mouton grid remains an essential reference - even though it may seem out of place in the eyes of some. For them, any organization in the broad sense has three universal characteristics (Blake and Mouton, 1980):

1. The objective (s) (interest in results, production);
2. The human element (interest in individuals);
3. The power (the way the hierarchical system is used to involve individuals in production).

According to the best seller: *Thinking, Fast and Slow*, the cognitive psychology (Kahneman, 2011), it is considered that the strategic moves of a teacher can help when it comes to the disciplinary actions, the management of the class and the emotional components of the knowledge given to the student. It can be emphasized the triple role of the teacher in any educational transaction: educator-caregiver, educator-teacher and educator-organizer (Dupont, 2000; Bernabé and Dupont, 2001). Two variables are already emerging: knowledge and the student. (Kahneman, 2011)

Moreover, we must not ignore the fact that learning must be active and constructive. In this sense, pedagogy would be an art of mediation to build “an arc between the child and knowledge” (Meirieu, 1993:195). If many declare themselves to be in agreement with this principle, it is nevertheless essential to make these remarks relatable.

Thus, we distinguish three variables, three axes, for our pedagogical leadership model: the teacher's interest in knowing it (Knowledge axis marked: K); interest of the teacher for the student (Student axis marked: S); (student participation in his/her learning participation marked: P). Using these three dimensions, different pedagogical leadership styles can be defined in a three-dimensional space, divided according to possible combinations of three variables

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(depending on whether they are more or less privileged: (K +, K-, S +, S-, P +, P-): eight cubic spaces each representing a specific style that is defined as shown in Figure 1.

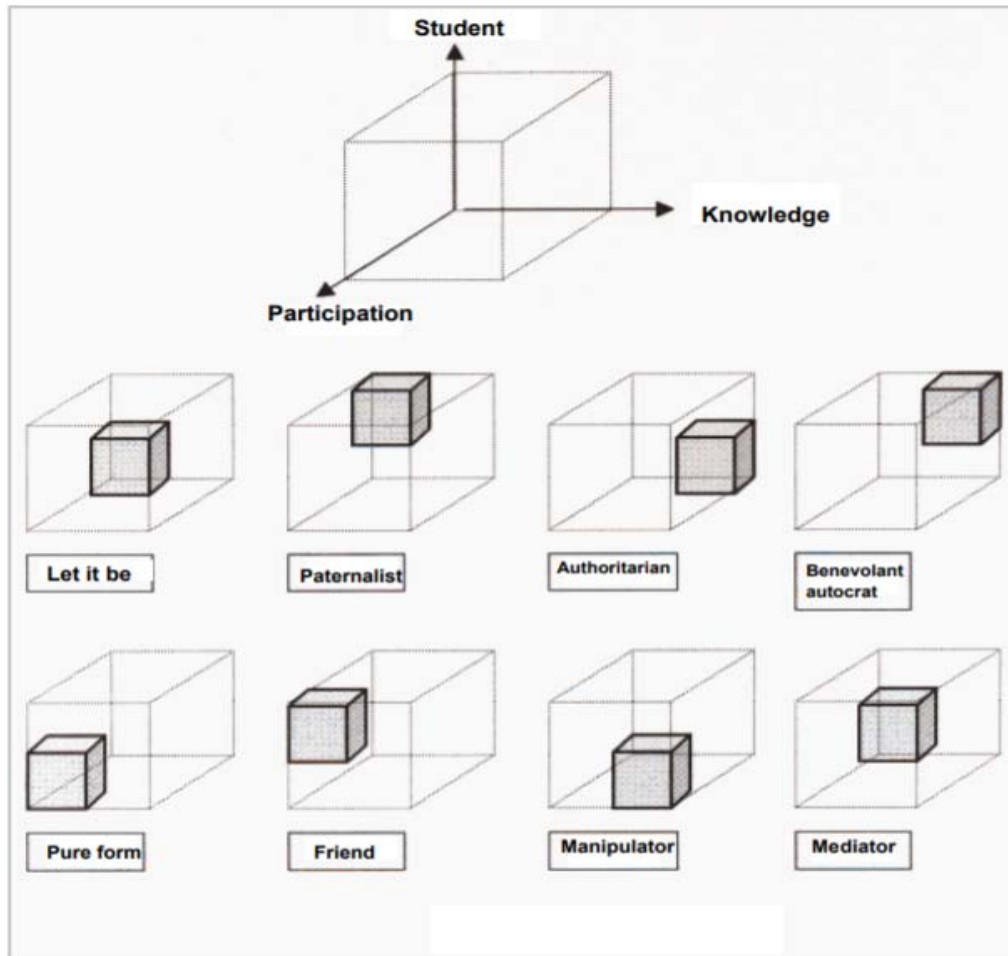


Figure 1: Different styles of leadership pedagogy
Source: Dupont (2000)

3. LEADERSHIP STYLES

Highlight some of the facets, we are considering for each of the eight styles while pointing out some of the drifts that might be due to overlooking or overreaching a single variable. It is obvious that it is difficult to conceive that the following trends apply to all or describe entirely an individual. A person can hardly be reduced to a “pure” style, it is unrealistic considering the complexity of the environment and the tasks. If features of each style are often present, the fact remains that a dominant style prevails in everyone. Our intention is mainly to suggest that the described behaviors may correspond to real situations, even if the reality is infinitely more complex than the simplified representation we make of it (Debarbieux, 1990).

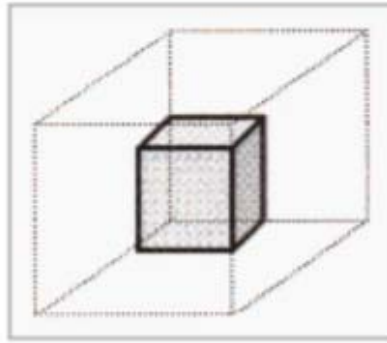


Figure 2: The case Let it be (K-, S-, P-)
Source: Dupont (2000)

The motivation behind this style is usually to stay in an organization without much involvement. Tired, jaded, disappointed or unmotivated, this teacher does just the minimum required. The division of apprenticeship work, as well as the simplification of tasks, are pushed to the extreme, offering no stimulants, no challenges to overcome, thereby creating a monotonous and repetitive work. Seeking to avoid controversy, his conception of evaluation is limited to a bare minimum, avoiding drawing attention to his lack of commitment or, more importantly, to incompetence or incapacity (Debarbieux, 1990).

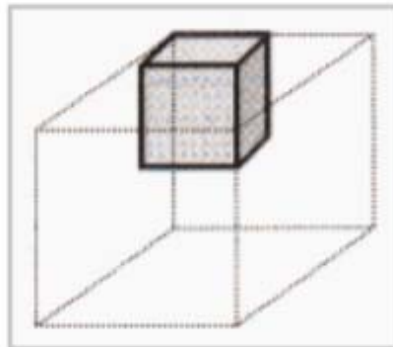


Figure 3: The case Paternalist (K-, S+, P-)
Source: Dupont (2000)

With this style, everything is arranged in learning sequences to satisfy the needs of the students. Values and standards of knowledge are in a spirit of conviviality established at relatively low levels. So how does the paternalist often seek to successfully cross all the pitfalls of the course? (By trying to convince and encouraging with positive reinforcement), sometimes with a marked tendency to brood “hi” students.

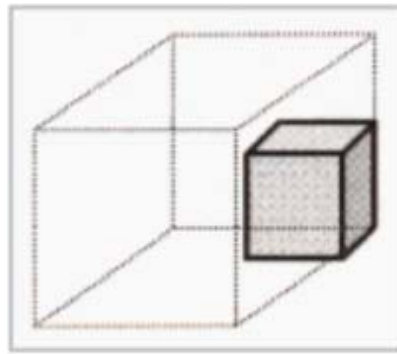


Figure 4: The case Authoritarian (K+, S-, P-)
Source: Dupont (2000)

In this management mode, the climate is not important; what matters is the tasks to be accomplished, the objectives to be attained in terms of subjects to be taught and guided by textbooks and workbooks. The program is the only “Contract” (non-negotiated and non-negotiable) linking teachers and students. The learning process is collective and transmissive in nature and is carefully controlled by a strict discipline, the teacher giving his instructions that not step by step, breaking down and fragmenting knowledge. It is as if the learning process was “extrinsic and foreign to the personality of the student.” (Defrance, 1992:63).

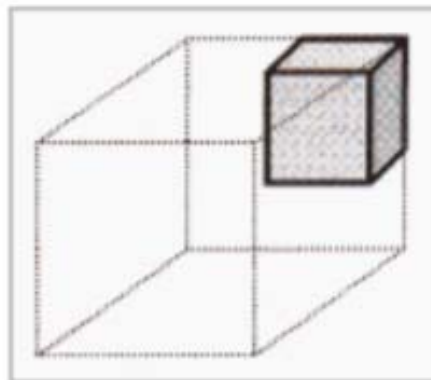


Figure 5: The case K+; S+; P-
Source: Dupont (2000)

The basic internal principle of such teacher (neglecting participation) could very well be translated as: “I am the teacher responsible for your learning, I will give you my knowledge and I will help you but in return I await your obedience as to the path I will show you.” The motivation that lies behind this style is probably to incite admiration by giving students (at the limit chosen and sorted) the benefit of their experience and his advice. In this way, we get closer patronage, the pupil becomes an apprentice under the aegis of a mentor. An autocrat Benevolent “who succeeds then becomes a teacher who has somehow managed to create doubles of himself.”

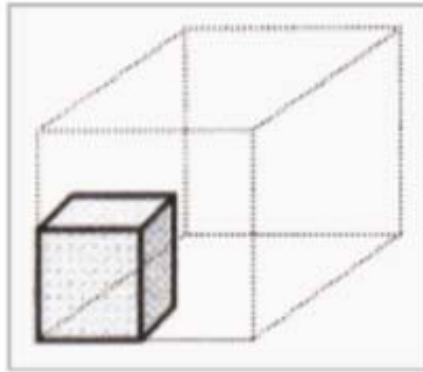


Figure 6: Pure form (K-, S-, P+)
Source: Dupont (2000)

It is here “simply” to give the change, to create the illusion of participation to meet the requirements of official texts and speeches. Actually, objectives could be threefold: minimum program compliance; obtaining obedience; passing exams that become the very purpose of the acquisition of knowledge. (Rogers, 1996)

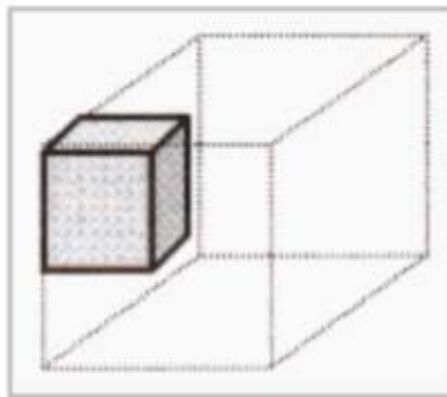


Figure 7: The case Friend (K-, S+, P+)
Source: Dupont (2000)

Perhaps more present among young people at the beginning of their career (anxious to be accepted by the group while gradually taking their marks in relation to their new function), this style combines student interest and participation. The desired harmony can come from the fact that the teacher keeps relations with students, for example through discussions about their centers of interest (football, music, etc.) (Rey, 1999).

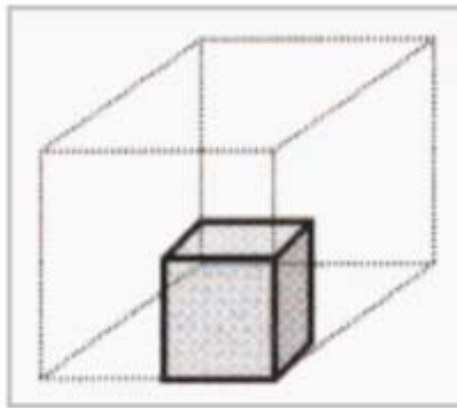


Figure 8: The case Manipulator (K+, S-, P+)
Source: Dupont (2000)

At first glance, by its accents on task and participation, this style has everything to seduce. Yet the lack of interest for the student leads us to make it the sneakiest and the most dangerous style of our grid. By a certain approach and biased presentation, the teacher induces choices in the pupil while giving the last impression that he is the one who makes them and that he is building something of himself while he is being manipulated to a place where the “master” wanted. Although this manipulation may seem remote, we cannot neglect the possibility. Skinner says: A control can be achieved if there are certain subjects to be controlled. (Skinner, 1967)

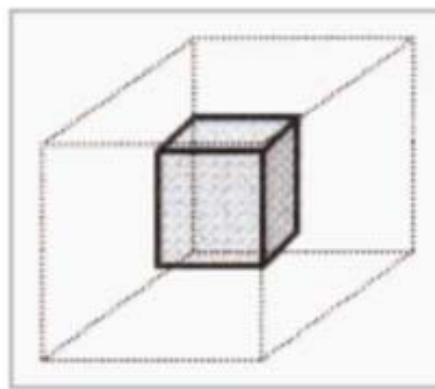


Figure 9: The case Mediator (K+, S+, P+)
Source: Dupont (2000)

The pedagogical leadership orientation “mediator” realizes the integration of three lines of learning-student-participation, thereby promoting a climate where work is good and students not only enjoy working but also stimulated to take charge and develop their critical thinking and creativity (Rogers, 1996).

The mediator is to be understood in the sense of Develay, a professor whose function is not to have a good relationship with the learner, but to make sure that this one develops a good relationship with knowledge (Develay, 1994)

4. CONCLUSION

An original application of the educational leaderships' three-dimensional model in Morocco was presented in my master thesis. However, the model was translated from management science to educational management, I believe that the new experience collected allows the management science to learn from education. As I noticed it wasn't only used in the schools but also applied in the management and the administration of the school which made me curious about whether it is possible to use it in the management of actual companies to achieve quality management.

In this case of course the variables would change depending on the hierarchical structure of the firm but the main framework has to remain the same. The three-grid model should be displayed as follow:

- Student → Employee
- Participation → Engagement
- Knowledge → Effectiveness.

Based on the used leadership style (see Figure 1), different results would be concluded and the purpose of the research would be to actually see if these methods are already subconsciously applied by the managers if so then does it have an effect on the quality of management and if not then investigate the implementation of it, in order to obtain Proficiency. I can conclude the model may play an important role in investigating the successfulness of quality management efforts of corporations by appointing the proper selection of leadership style.

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ROLES OF CITIZENS IN SMART GOVERNMENT SOLUTIONS

Máté Szilárd, Csukás

PhD student, Corvinus University of Budapest, Budapest, Fővám tér 8, 1093
mate.csukas@uni-corvinus.hu

Zsolt Roland, Szabó

Dr. habil., Corvinus University of Budapest, Budapest, Fővám tér 8
zsoltroland.szabo@uni-corvinus.hu

SUMMARY

Discussion in research is highly criticizing the technology and corporate dominance of smart cities for their failure to adequately address social challenges. A growing discourse revolving around the future digitalization of urban areas (Smart Cities) suggests that being smart is not a status, but an iteration phased across various levels of a transition process. Researchers argue that the second-generation smart city paradigms define the role of citizens as active contributors to problem-solving and planning, in contrast to the first generation's passive roles as only users. However, there is a lack of empirical research on the manifestation of these models. This study analyses smart government initiatives, and show the concrete roles of citizens as per the first- and second-generation Smart City paradigm. We observed that active and passive roles could be well-identified and distinguished. The category development procedure resulted in a surprisingly even distribution of citizen roles between the two approaches. The methodology is repeatable in other domains of the SC model, as direction for future research.

1. INTRODUCTION

(Crowley et al., 2016) and (Nomura, 2017) in (Trencher, 2019) argue that second-generation smart city paradigms define the roles of citizens as active contributors to problem solving and planning, in contrast to the first generation's passive roles as only users. Discussion in research is highly criticizing the technology and corporate dominance of smart cities for their failure to properly address social challenges. However, there is a lack of empirical research on the manifestation of these models. This analysis wants to describe the concrete roles of citizens as per the first- and second-generation Smart City paradigm in smart government initiatives.

The research goal of this study is to set up a categorization of citizen roles according to the first- and second-generation Smart City paradigm. The research question is about the roles of citizens as per first and second-generation SC paradigms in smart government solutions. Content analytical technique is inductive category formation.

2. METHODOLOGY

The applied content analytical technique is inductive category formation, executed on the QCAMap (<https://www.qcamap.org/>) Qualitative Content Analysis website. The content analytical units are defined as the following: coding units are complete sentences, while context unit is all description of the respective case. Multiple coding is counted. Category definition: in case of the first-generation model, the role of citizens is defined as passive actors i.e.,

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crowdsourced sensors, end-users or service/product consumers. In case of second generation, active role of citizens is defined as co-creators or contributors to innovation, problem solving and planning. The level of abstraction can be defined as, role of citizens in classified to first- and second-generation theory in all respective solution, in smart government domain. The coding process followed the model by Mayring (2000) and it uses an inductive category development method.

During the process of category revision, the following changes were made. [B8] Crowdsensing and [B9] Diffusion of existing knowledge were moved to the first-generation category, because in these cases, citizens role is rather passive than active.

The main source for the data are two websites, collecting Smart City solutions and projects: Bee Smart City platform (<https://www.beesmart.city>) and Smart City Projects Database, curated by Lechner Knowledge Centre (<http://okosvaros.lechnerkozpont.hu/en/>). Data was gathered to excel sheet with the utilization of Web Scraper Google Chrome Extension (<https://www.webscraper.io/>).

Description of the data

1. Type of the document: Structured description of smart city solutions
2. The ‘physical’ characteristics of the downloaded document: .txt document, 608 pages, 608 individual solutions, described as per the following aspects: summary, problem, aim, approach, results
3. Date of the document: 2019
4. Author of the document / responsible person for content: Since each solution is managed by its respective ‘owner’, the responsible persons are difficult to determine. Contributors are from cities, solution providers, universities and the civil society, sharing their passion and expertise to make cities and communities smarter. The owner of the platform is partly responsible for the content on its website.
5. For what audience was the document written? - considering the attributes of each solution, the document was mainly written for city managers, urban planning professionals, and policymakers who are actively practicing in municipal environments.
6. The internal characteristics of the document (content): The document describes smart city solutions according to the following structure: Summary, Problem, Aim, Approach, Cost, and Results.
7. The aim of the document: The aim of this document is to simplify the exchange of best practice solutions and provide an efficient toolset for smart city analysis, for facilitating collaboration and the successful implementation of replicable solutions. Also, to connect smart city stakeholders and professionals globally through this unique online smart city solution network. Furthermore, raising awareness of state-of-the-art solutions and best practice initiatives.

The screenshot below illustrates the coding environment of the document, with defined instructions in the left side, the text in the middle, and ongoing inductive category coding in the far-right.

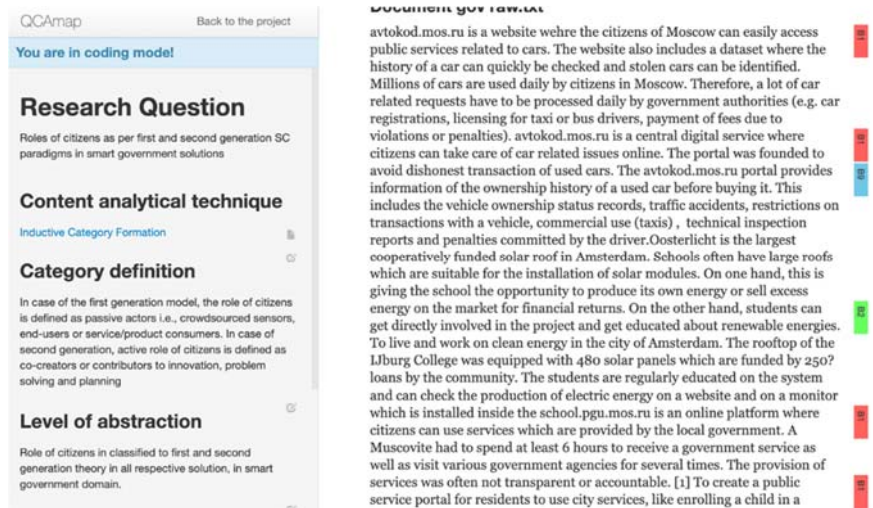


Figure 1: coding environment of the QCA Map website

Source: own edition

3. RESULTS

Once coding of the text material was finished and categories were finalized, results were exported from the website to excel:

- Coded passages (128 items)
- Category statistics (as illustrated in the table below)

Table 1.: Absolute frequencies of passages according to categories

Category	Category Title	Absolute Frequency
Smart City 1.0		63
B1	Service users	30
B12	Citizen centric development	2
B14	Consumers	5
B9	Diffusion of existing knowledge	15
B8	Crowdsensing	11
Smart City 2.0		65
B2	Action learning	1
B3	Collaborative development	13
B4	Collaborative planning	24
B6	Prosumers	6
B7	Better collaboration	10
B13	Collective action for change	4
B15	Information source/content creator	7

Source: own edition

Based on the category statistics, it seems that the absolute frequency of text passages coded to first- and second-generation categories are nearly equal (SC 1.0: 63; SC 2.0: 65). Considering the novelty of SC 2.0 paradigm, the frequency in this category seems to be high. There are two possible answers for this. First, smart government category is very sensitive regarding the role, especially the active participation of citizens. Conducting the same analysis in other categories - i.e., smart environment would probably show a shift in the direction of SC 1.0. Secondly, in

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many cases these initiatives are merely service offerings for municipalities. Concrete viability and performance of these solutions are not considered in the analysis. It could be a future direction for research to weight samples with their result factor - e.g., number of cities where it was implemented.

In the first-generation category, citizen role as service users is dominating. This also match with the theoretical background, together with the categories of consumers and crowdsensing as well. On the other hand, the category of [B9] Diffusion of existing knowledge is an identified new role of citizens. This category summarizes the phenomena, that city managers and urban planners use technology – i.e., big data visualization to translate complex phenomena to citizens, or adopting open data agenda to present existing knowledge of the city and influence their behaviour. This SC 1.0 category assumes only a passive role of citizens, where they are mere observers of the access information and not using them.

Among second-generation categories, collaborative planning and development are the most frequent.

Table 2.: Created Citizen Role Categories with definitions and examples

Inductive Category Title	Citizen Role	Examples
Smart City 1.0	Passive	-
Smart City 2.0	Active	-
Service users	End-users of mainly governmental services	<p>“avtokod.mos.ru is a website where the citizens of Moscow can easily access public services related to cars. The website also includes a dataset where the history of a car can quickly be checked and stolen cars can be identified.”</p> <p>“Wormhotels for sidewalk is a project to install public composters which can be used by residents of the neighborhood for biological waste disposal”</p>
Citizen centric development	In this category, citizen needs, and requirements are taken into account, but without their active participation.	“SCTOOL helps urban managers to choose the systems and technologies that allow them to offer better services to their people, in a quick and effortless way. It also enables service providers and technology developers to improve their products by adapting them to the real needs of cities and citizens.”
Consumers	Citizens are direct consumers of some services.	“Smart Parkland is a Parkland County initiative to make sure our rural residents have the opportunity to get connected to broadband and have access to all the things you can do with the technology.”
Crowdsensing	Citizens take the role as sensors. A large number of individuals with usually mobile devices extract information to measure, map,	“Waze provides the Traffic Management Centre (TMC) with a data feed of their crowd-sourced findings. This helps the TMC to verify and improve the status of the transport network, improve situation intelligence and inform decisions. It is a feedback loop with added value between citizens, the private sector and the York

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	analyze, estimate or infer (predict) any processes of common interest.	region that is continuously verifying and updating on the basis of real traffic conditions”
Diffusion of existing knowledge	Citizen are granted access to useful and properly presented (visualized) information based on available data, in order to deliver better services	“YorkSafe strived to make its data more accessible to citizens and increase the reach of inspection reports.” “3D information used by professional designers is not fully used in building processes. Combining BIM information with City 3D Models. We want to give all stakeholders of the city better tools to understand and also communicate what is going on.”
Action learning	Citizens participate in i.e., operating a smart solution, but mainly for developing their knowledge base and skills.	“On the other hand, students can get directly involved in the project and get educated about renewable energies.”
Collaborative development	Citizens are actively involved in the creation of city-services, or concrete implementation of projects/solutions.	“The platform offers a space for government and citizens to collaborate on projects that can actually be implemented.” “FIWOO delivers open and fully documented datasets and APIs. Any authorized party wanting to use them can do so, allowing the creation of new applications and services by and for cities, citizens and other organizations. FIWOO s Market Place will centralize all solutions and services developed, building a community to ensure quality and sustainability.”
Collaborative planning	Citizens are active participants in the urban planning process. They propose new projects, interventions, review and assess existing proposals,	“The idea of the Civic Budget allow to solve the following problems: low-level of citizen involvement in participative activities, with the identification of the needs of local communities, under-funding of small municipal investments” “Citizens can give their advice regarding a specific question on the platform and their contributions are condensed to insights via crowd-analysis.”
Prosumers	Citizens are both users and producers/value creators of services	“Allowing your citizens and partners to be self-informed and connected via your platform” “the administration also encourages shop owners, landlords and citizens to equip their shops and homes with cheap "Freifunk" routers, share part of their bandwidth and offer free WIFI hotspots to their neighbors. By sharing their own bandwidth, Internet access for others is made possible.”
Better collaboration	Citizens are defined as sources of	“The CityZenApp SaaS Platform is a new approach to how a municipality provides services

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	validation of public initiatives. General aim is to strengthen public-citizen or other stakeholder dimension of local collaboration.	to its citizens. The central point is the mobile phone while other channels (web, email, sms) are being utilized” “Knowledge Hub is an online professional, social collaboration platform. It allows organisations to significantly improve engagement with stakeholders (businesses, citizens, peers) through a feature rich suite of digital tools. You can share information, co-contribute to innovative projects or simply give and get help to your network.”
Collective action for change	In case of many initiatives, citizens active role is key for achieving some significant urban challenge.	“If the consumption of energy by citizens was drastically changed, an equal amount of CO2 emissions could be saved. To reduce CO2 emissions by at least 40% by 2030.”
Information source/content creator (feedback)	In contrast to crowdsensing, citizens are actively participating in the validation of public initiatives, creating contents and providing information on certain issues.	“We aggregate data from sources like social media, city hotlines, and more, and use AI to transform this data into accessible and actionable insights based on real community feedback.” “how citizens feel about different city-centric topics with real-time sentiment analysis” “This is essential to make political decisions, to know the existing reality to approach the planning and the change by the technicians, to integrate the intelligent systems of control with the objects of the city by the technologists and to improve the interaction of the citizen with his city through geographic information systems.”

Source: own edition

4. CONCLUSIONS AND RECOMMENDATIONS

It seems that the dichotomy of passive and active citizen roles is balanced in the studied smart government initiatives and solutions. The long ago criticised technology driven corporate smart city model (Söderström et al., 2014; Vanolo, 2014) and the exclusion of citizens (Engelbert et al., 2019) in the transition process brought to life the second generation smart city paradigm. This model foresees a greater, active role for citizens.

In the first-generation model, the passive role of citizens characterized as users, consumer or sensors, which align with theory. Further roles were identified, including being the subject of product/service developers design process, where citizen needs are considered, but without the active involvement of them; also, being target of shared knowledge that was usually derived from big data technology.

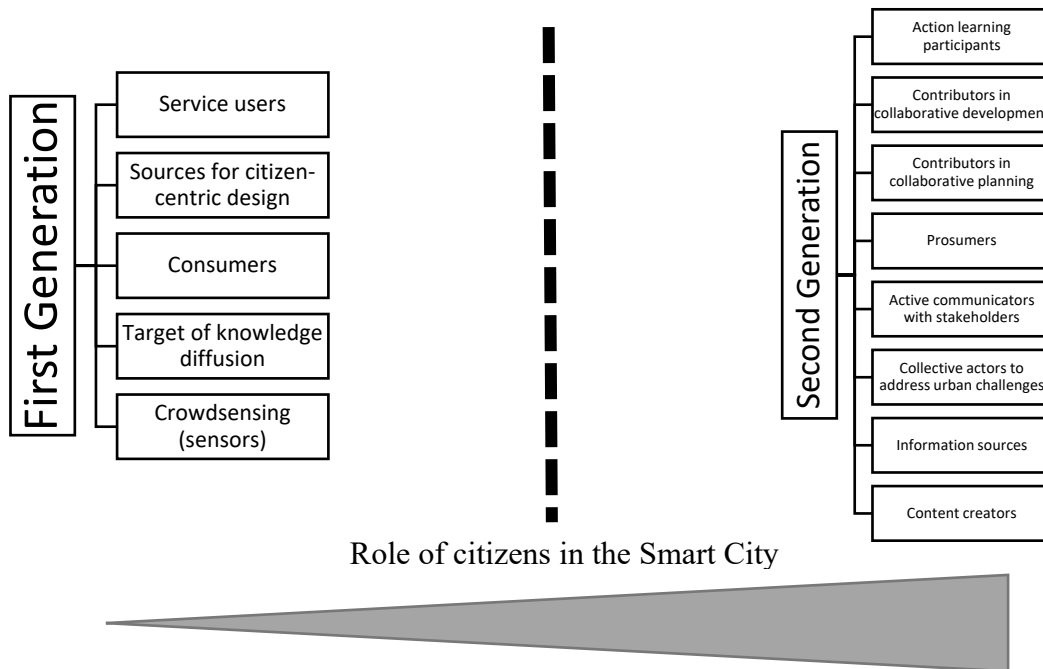


Figure 2: Summary table for the categories
Source: own edition

In the second-generation category citizens are active participants of knowledge sharing initiatives, participants in collaborative development and planning, producers and consumers (prosumers) of services, engaged in superior communication channels with stakeholders, act collectively to tackle urban challenges, sources of invaluable information as content creators. Theory describes citizens in this phase as: “Active role as co-creators or contributors to innovation, problem solving and planning” (Trencher, 2019, p. 2). These attributes are found in the categories.

The above mentioned technology push (Angelidou, 2015) and ignorance of social dimensions of smart city developments could be a main driver for the high frequency of second-generation text passages in the examined sample. Other reason is the sampling criteria of smart government solutions, which are generally focused on innovative public services, platforms that deal with stakeholder engagement.

It could be a future direction for research to carry out the analysis in all the six domains of smart cities, or include additional factors to the samples – i.e., city indicators where they were implemented.

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**AZ INFORMATIKAI SZOLGÁLTATÓK PIACI HELYZETÉNEK
ELEMZÉSE MAGYARORSZÁGON*
ANALYSIS OF THE MARKET SITUATION OF IT SERVICE
PROVIDERS IN HUNGARY**

Erdei Edina

PhD hallgató, Debreceni Egyetem, Ihrig Károly Gazdálkodás- és Szervezéstudományok
Doktori Iskola, 4032 Debrecen, Böszörményi út 138., edina.erdei@econ.unideb.hu

Yusmar Ardhi Hidayat

PhD hallgató, Debreceni Egyetem, Ihrig Károly Gazdálkodás- és Szervezéstudományok
Doktori Iskola, 4032 Debrecen, Böszörményi út 138., yusmar.hidayat@econ.unideb.hu

Gál Zsolt

Egyetemi tanár, Pécsi Tudományegyetem, Földtudományok Doktori Iskola
7624 Pécs, Ífjúság útja 6. E/514, gzs@ccprint.hu

ÖSSZEFOGLALÁS

Az informatika és az információs és kommunikációs technológia nemzetgazdaságban betöltött szerepe és súlya miatt kiemelt jelentőséggel bír. Hazánkban az informatika a legdinamikusabban fejlődő iparág, fontos társadalmi és gazdasági szerepet játszik, a foglalkoztatást és a termelt hozzáadott értéket tekintve pedig világszerte vezető pozícióban van. Magyarországon jelenleg közel 1300 aktív informatikai vállalat van, ezért azok szerkezetét, piaci részesedését és a gazdaságra gyakorolt hatását érdemes vizsgálni. Kutatásunk célja az informatikai szolgáltatók piaci helyzetének elemzése Magyarországon. Összefoglaljuk, hogy a 2014-2018-as időszakban milyen ütemben változott az informatikai vállalatok száma, azok hogyan befolyásolják a piaci árakat és a versenytársak miként reagálnak a folyamatos változásokra. A tanulmány létrehozását elősegítő adatok közötti összefüggések elemzéséhez a leíró statisztikai módszereken túl a Hirschman-Herfindahl-indexet és a koncentrációs arány módszereket alkalmaztuk. A két módszer segítségével olyan eredményekre jutottunk, amik hatással lehetnek az informatikai vállalatok stratégiáinak újragondolására és a gazdasági, társadalmi szerepük fejlődésére.

SUMMARY

IT and information and communication technology are of particular importance due to their role and importance in the national economy. Information technology is the most dynamically developing industry in Hungary, plays an important social and economic role and is in a leading position worldwide in terms of employment and value added. At present, there are nearly 1300 active IT companies in Hungary, so it is worth examining their structure, market share and impact on the economy. The aim of our research is to analyze the market situation of IT service providers in Hungary. Here's a summary of how IT companies have changed over the 2014-2018 period, how they impact market prices, and how competitors are responding to the on-going changes. -index and concentration ratio methods. These two methods have produced results that can influence the rethinking of IT companies' strategies and the development of their economic and social role.

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1. BEVEZETÉS

Az elmúlt évtizedekben az informatika más szerepbe került, mint ahogy azt elvárták. A korábbi támogató, a napi működést segítő szerepét kinőve az új célok megvalósításához, a versenyelőnyök megszerzéséhez elengedhetetlen eszközzé vált, s rengeteg funkcióval tette gazdagabbá a humán, gazdasági, társadalmi tevékenységeket.

Az informatikai vállalatok fejlődését alapvetően a rendelkezésre álló humán erőforrás minősége és mennyisége határozza meg. Nemzetközi és hazai szinten nagymértékű munkaerőhiány és minőségi problémák léptek fel az munkaerőpiacon. Ahhoz, hogy Magyarország sikeres legyen a globális versenyben, a kormányzat, az iparág és az oktatás szoros együttműködésére van szükség.

Az informatikai vállalatok a technológiákhoz kapcsolódó gazdasági hozzáadott értéken belül számos terméket és szolgáltatást nyújtanak, ilyen például az internet használata, telekommunikációs berendezések, e-kereskedelem stb. (Jayawardane és De Alwis, 2017).

Az informatikai technológiák fejlesztése új lehetőségeket teremt a logisztikai folyamatokat illetően is. Az automatikus számlálóberendezésekkel ellenőrizhetők a közutak terhelése, illetve a közlekedés egyéb paramétereinek mérésére és előrejelzésére szolgál.

Habár a jelenlegi kutatás nem feltétlen az adatok generálásáról, és feldolgozásáról szól, viszont meg kell említenünk, hogy korábbi kutatások alapján 2019-ben több adatot generálunk, mint az előző 5000 évben összesen (Infotér, 2019). Akár igaz, akár nem ez az állítás, abban biztosak lehetünk, hogy a vállalatoknak komoly kihívást jelent az információk felhasználása, hiszen az egyik legfontosabb számukra, hogy megfelelő betekintést kapjanak a hatékonyabb, gyorsabb és rugalmasabb munkavégzéshez.

Gartner előrejelzése alapján a vállalati stratégiák 90%-a 2022-re az információt találja majd a vállalatok legfőbb előnyének (Jakobi, 2019). Mivel a rengeteg információt humán erőforrással esélytelen elemezni, ezért muszáj lesz a gépek, informatikai eszközök beiktatása és használata a munkafolyamatok.

Az Oracle az automatizálást tartja a legfontosabbnak az üzleti életben (Belyaev et al., 2018). Az informatikai eszközök 70%-a teljesen automatizált lesz, ezáltal a vállalatok több száz felszabadult munkaórát tölthetnek majd a marketingkommunikációs eszközök fejlesztésére, a vállalkozói kapcsolatok elmélyítésére és a foglalkoztatottak oktatására.

Mivel az informatikai eszközök, az új technológiák a versenyképesség fő meghatározója, ezért releváns kutatási kérdés annak vizsgálata, hogy az informatikai vállalatok megoszlása, részesedése hogyan alakul hazánkban és milyen módon befolyásolják a gazdasági és társadalmi változásokat.

Az összefüggések feltárására az EMIS (Emerging Markets Information Service) adatbázis volt segítségünkre. Az adatbázis céginformációkat, makrogazdasági elemzéseket, pénzügyi adatokat, árfolyamokat, gazdasági előrejelzéseket és statisztikákat tartalmaz magyar és angol nyelven. Az EMIS adatbázisból a csak magyarországi, NAICS (North American Industry Classification System) 51-es csoportba tartozó információs-technológiai szolgáltatással foglalkozó vállalatokra kinyert adatokat elemeztük.

Kutatásunk eredménye hatással lehet az informatikai vállalatok stratégiáinak újragondolására és a gazdasági, társadalmi szerepük fejlődésére.

2. SZAKIRODALMI ÁTTEKINTÉS

Az innováció gazdasági, területi fejlődése régóta központi kérdés, hiszen az összefüggések vizsgálatával már a korai növekedésméletek képviselői (Solow, 1956; Schultz, 1961) is foglalkoztak. Rechnitzer János hazánk településeinek innovációs fejlődését, térszerkezetét vizsgálta. A megkérdezett vállalatok innovációra és a kutatás fejlesztésre való hajlandósága és a vállalkozások mérete között negatív korrelációt figyelt meg.

A szakirodalomban egyre többet olvashatunk a tudás által vezérelt társadalmról, hiszen napjainkban a tudás és a tanulás meghatározó szerepet játszik a gazdasági tevékenységek során. A Magyar Innovációs Kamara felmérést készített a rendszerváltozást követően, mely során megvizsgálták, hogy nagymértékben csökkentek a kutatás-fejlesztés és az innovációra fordított összegek, a vállalkozások harmada pedig semmilyen fejlesztést nem végez.

Az innovációs állapotot érintő kutatás tovább folytatódott. Chikán (1997) megállapításai szerint Magyarországon hiányoznak az innovációhoz szükséges források, a vállalkozások fejlesztési potenciálja is alacsony, illetve az adóztatás mértéke magas. Ekkor még nem terjed el az a nézet, miszerint az innováció nélkül nem lehet tartósan versenyképesnek lenni (Oláh et al., 2018).

A 21. században az új technológiák, valamint a szervezeti és szociális innovációk meghatározó szerepet játszanak az egyes régiók, országok versenyképességének alakulásában. Drucker (2001) szerint minden intézmény stratégiai célként tűzi ki a versenyképességet és a vállalatoknak muszáj mérniük az eredményeiket és viszonyítaniuk az adott terület vezető vállalataihoz, ahhoz, hogy fennmaradjanak a globális piacon.

Nicholas Carr (2003) azt állította, hogy a XXI. században nem várhatunk megkülönböztető versenyelőnyt az informatikától, viszont a versenyben maradás elengedhetetlen eszközévé vált. Az innovációs tevékenységek eredményeit inkább az egyes szolgáltatási ágak, mintsem az egyes vállalatok közötti különbségek határozzák meg.

Greenway és Kneller (2007) például arra a megállapításra jutottak, hogy a cégek heterogenitása azzal magyarázható leginkább, hogy az egyes vállalatoknak milyen a termelékenységük, mennyire képesek tanulni, illetve milyen aspirációik vannak. Bebizonyították, hogy e három feltételnek egy időben kell teljesülnie a versenyképesség növeléséhez és a sikeres nemzetközi jelenléhez.

A vállalat vezetők kétharmada állítja azt, hogy fontos a digitális átalakulás, ha versenyben szeretne maradni. Alapvető fontosságú az IT eszközök üzleti és stratégiai célú megtervezése (Ključnikov et al., 2019).

A vállalatok vezetői az innovatív technológiákra és a biztonsági kérdésekre fókuszálnak. A megkérdezett IT vállalatok 68 százaléka úgy nyilatkozott, hogy a következő két évben többet fog költeni a biztonságra, a mobilalkalmazások fejlesztésére, míg a 62 százalékuk a termelékenységet növelő berendezések és termelési tervek kidolgozására fordított időt és költséget is növelni szeretné a jövőben (Gupta - Krishnamurti, 2016).

A piaci struktúrát a vállalatok piaci ereje határozza meg. A piaci hatalom azt írja le, hogy egy vállalatnak hatalma van az ár felett, mely szerint megkülönböztetünk monopolista és oligopolista piacot (Pandey, 2004, Sanusi et al., 2017).

A piacok osztályozása az egyes vállalati iparágak szerint alakulnak, azaz fontos, hogy az adott piacon értékesített termékek homogének legyenek. Ebből kifolyólag négy piaci típust különböztetünk meg: tiszta verseny, tiszta monopólium, oligopólium és a monopolista verseny (Meyer et al., 2017, Nguyen és Kira, 2014). Az informatikai társaságok magyarországi piaci szerkezete utalhat az oligopólium piacára.

Rathinasamy et al. (2000) szerint a piaci szerkezet (hatalom) a Lerner-index, a Herfindahl-Hirschman-index vagy Tobin Q-jával mérhető (Rumler, 2004). A piaci szerkezet, a piaci koncentráció korrelál a nyereséggel és az informatikai társaságok magatartásával más

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vállalatokkal folytatott versenyben. Bain azzal érvelt, hogy a piacon kevesebb vállalat vezethet alacsonyabb versenyképességhez és teljesítményhez. A társaság növeli teljesítményét a nagyobb jövedelemszerzés képessége alapján. Pozitív kapcsolat lenne a koncentráció és a teljesítmény között (Gavurova et al., 2017, Meyer et al., 2016, Ślusarczky és Kot, 2012).

Rumler és Waschiczek (2016) azt állították, hogy a magasabb koncentráció csökkenti a versenyt, ha ösztönzi a vállalkozások közötti összejártszást, fordítva, ha alacsonyabb a piaci koncentráció, az összejártszási magatartás elrettentésével javulhat a teljesítmény. Ezenkívül egy nagyobb piaci koncentráció nagyobb piaci részesedést eredményezhet piaci erejének feltárásakor a nagyobb nyereség elérése érdekében (Mura et al., 2018). A piaci koncentráció arra utal, hogy egy adott üzletágban felhalmozódnak a piaci részesedések. Megállapítja azt a következtetést, hogy a magas szintű piaci koncentráció azt mutatja, hogy néhány vállalat nagyobb piaci részesedést szerezhet, míg a többi társaság a piac ellenére működik. Az alacsony piaci koncentráció azonban azt jelenti, hogy sok vállalat alacsonyabb piaci bevételt tarthat fenn. (Belás et al., 2015, Klistik et al., 2018).

Amennyiben azonban támogatni akarjuk a digitális társadalmi innovációk elterjedését, ahhoz arra van szükség, hogy a digitális technológiákat a közjó növelése érdekében fejlesszük (Grupta-Krishnamurti, 2016). Olyan szabályozási és finanszírozási környezetet hozunk létre, amely minden szereplőt arra ösztönöz, hogy innovációs tevékenységének fókuszát az az együttműködésen alapuló gazdaság és társadalom, valamint a közvetlen demokrácia területére helyezze. Mindezeket túl jelen pillanatban szükségesnek tűnik a potenciális szereplők informálása, hálózatba szervezése és képzése is. Technológiai szempontból pedig a nyílt forráskódú rendszerek, architektúrák támogatására van szükség a felhasználói adatok erőteljes védelme mellett (Lakner et al., 2019). Ha mindezek megvalósulnak, akkor van esély a digitális társadalmi innovációkon keresztül az életminőség javítására és a társadalmi problémák megoldására is (Erdei, 2019).

3. ANYAG ÉS MÓDSZER

A magyarországi vállalkozások száma előreláthatóan folyamatosan növekszik, hiszen a profitszerzés céljából egyre több szolgáltatói vállalat lép be a piacra. A magyarországi IT-vállalkozások számának és profitjának összefüggése alapján általánosságban arra a következtetésre juthatunk, hogy a magyarországi informatikai vállalatok kismértékű növekedése a társaságok profitjának enyhe növekedését eredményezheti.

Vizsgálatunk a 2014-2018 közötti időszakra terjed ki. Elemzésünk során az informatikai szolgáltatók árbevételét és piaci helyzetét vizsgáltuk meg annak érdekében, hogy általános képet kapjunk azokról a vállalatokról, amelyek az IT piac vezető vállalatai közé tartoznak. Összefoglaljuk, hogy az informatikai vállalatok mennyire játszhatnak össze a piacon, valamint az elmúlt öt évben hogyan változott azok száma.

Az adatokat az EMIS statisztikai adatbázisból vettük, az adatok közötti összefüggések

A kutatás során a NAICS szám alapján az 51-es csoportba tartozó információs-technológiai szolgáltatással foglalkozó vállalatokat elemeztük. Az adatokat az EMIS statisztikai adatbázisból vettük, mely céginformációkat, makrogazdasági elemzéseket, pénzügyi adatokat, árfolyamokat, gazdasági előrejelzéseket tartalmaz.

A kérdőíves felmérés elemzésére számos statisztikai módszert alkalmaztunk. A leíró statisztikai módszerek közül elsősorban középértéket jellemző átlag, valamint szóródást reprezentáló minimum, maximum értékeket használtunk. Az átlag az eloszlás várható értékét fejezi ki, azonban ez az érték nagyon érzékeny az adathibára, illetve a szélsőséges, kiugróan magas értékekre (Ketskemény-Izsó, 2005).

A tanulmány során a Hirschman-Herfindahl-indexet (HHI) és a koncentrációs arány (CR) módszereket is alkalmaztuk, melyek megmutatják egy adott gazdasági szektor piacon lévő

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vállalatainak piaci részesedését. Fontosnak tartottuk a piaci részesedés vizsgálatát, hiszen az állam egyik alapvető feladata az, hogy visszaszorítsa a túlzott piaci fölény megszerzésére irányuló törekvéseket. Ezt a módszert gyakran használják annak objektív mérésére, hogy egy adott piaci szerktor, jelen esetben az informatikai ipar mennyire koncentrált.

A Hirschman-Herfindahl-index szerint a piacot három típusba sorolhatjuk:

- Nem koncentrált piac: ahol a HHI értéke 1500 alatti
- Mérsékelt koncentrált piac: ahol a HHI értéke 1500 és 2500 közötti
- Magasan koncentrált piac: ahol a HHI értéke 2500 feletti.

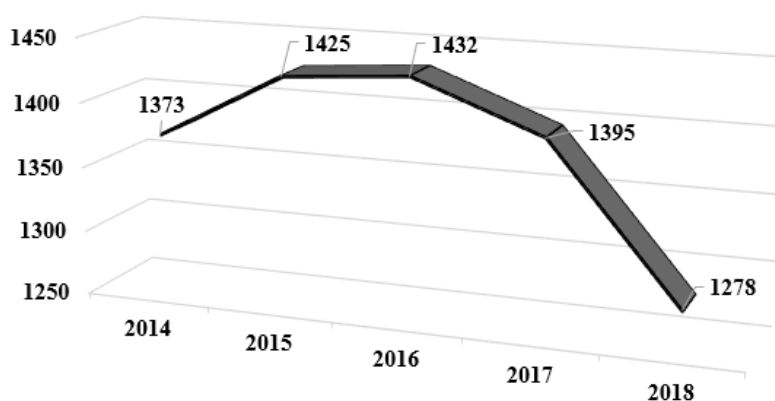
A koncentrációs arányt az adott iparág piaci részesedésének százalékos összegével számítjuk ki (Szabó – Kovács, 2018). A százalékos arány 0-100 között mozog, ami az iparágban a verseny fokát jelenti. A piacot a koncentrációs arányt kiszámítva a következő négy típusba sorolhatjuk:

- Nincs koncentráció, ha a CR megközelíti a 0% -ot. Ez az eredményt tökéletes versenyt vagy monopolista versenyt jelent.
- Alacsony koncentráció, ha a CR értéke 0% és 40% között van. Ekkor a piac tökéletes versenyéről vagy az oligopóliumról beszélhetünk.
- Közepes koncentráció, ha a CR értéke 40–70% közötti. Ez az iparági oligopóliumot jelenti.
- Magas koncentráció, ha a CR 70% és 100% között van. Ezen esetben vagy oligopóliumról vagy monopóliumról beszélhetünk.

4. EREDMÉNYEK

A működő informatikai vállalatok száma az elmúlt öt évben évről-évre változott (1. ábra). A csúcspont 2015-ben volt, ezt követően jelentősen visszaesett ezen iparági vállalatok száma. A bevételhez képest viszonylag a kevés ráfordítás az elsődleges oka annak, hogy ezek a vállalatok belépnek a piacra és felveszik a versenyt a többiekkel. Egymásra licitálnak, hogy megszerezzék a legjobb informatikai szakembereket. Az informatika vagy a kutatás-fejlesztés területén nem feltétlen a szaktudás hiányával van a probléma, hanem azzal, hogy a munkakeresőknek lehetőségük van az ajánlatok közül a legjobbat elfogadni.

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1. ábra. Informatikai vállalatok száma hazánkban 2014-2018 között

Forrás: Saját szerkesztés az EMIS adatbázis alapján, 2019.

Az EMIS adatbázisban a 2018-as adatokat megvizsgálva 1898 informatikai vállalatot találtunk, ami közül mindösszesen 1278 az aktív. A felmérés alapján elmondható, hogy a legtöbb informatikai vállalat székhelye Budapesten van. A második helyen Hajdú-Bihar megye található, amit Pest megye, majd Baranya megye követ. Az adatok alapján megállapítható, hogy 2018-ban az ország minden megyéjében volt olyan vállalat, ami az informatikai iparágban tevékenykedik.

1. táblázat. A NAICS 51-es csoportba tartozó, magyarországi működő vállalatok városenkénti 2018-as adatai.

Megye	Régió	Informatikai vállalatok (NAICS 51)
Észak-Magyarország	Borsod-Abaúj-Zemplén	13
	Heves	15
	Nógrád	22
Észak-Alföld	Hajdú-Bihar	167
	Jász-Nagykun-Szolnok	78
	Szabolcs-Szatmár-Bereg	52
Dél-Alföld	Bács-Kiskun	36
	Békés	62
	Csongrád	31
Közép-Magyarország	Pest	124
	Budapest	319
Közép-Dunántúl	Komárom-Eszergom	23
	Fejér	59
	Veszprém	42
Nyugat-Dunántúl	Győr-Moson-Sopron	26
	Vas	13
	Zala	36
Dél-Dunántúl	Baranya	79
	Somogy	65
	Tolna	16
	Összesen	1278

Forrás: Saját szerkesztés, 2019.

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Az elemzés szempontjából fontos az IT vállalatok árbevételének vizsgálata is (2. táblázat). Megnéztük az 1278 db vállalat árbevételét, majd megállapítottuk, hogy a top 10 informatikai cég közel fele uralja nettó árbevétel szinten az IT piacot.

A Magyar Telekom Nyrt. nettó árbevétele a legnagyobb, körülbelül 19%-os piaci részesedéssel. A távközlési és telekommunikációs vállalat Magyarország legnagyobb távközlési szolgáltatója és egyben legnagyobb cége. A vállalat vezetékes és mobil szolgáltatásokat nyújt, adatátviteli és nem hangalapú, informatikai és rendszerintegrációs területeken. A Magyar Posta Zrt. nettó árbevétele kb. 7%-os piaci részesedéssel bír. A Telenor Magyarország Zrt. és a Vodafone Magyarország Mobil Távközlési Zrt. árbevétele közel azonos. Hasonló piaci részesedéssel rendelkeznek. A többi IT társaság nettó árbevétele 500 millió EUR árbevétel alatt van, kb. 1%-ot meghaladó piaci részesedéssel.

A 10 legjobban működő IT-cég piaci részesedése megmutatja, hogy Magyarországon egyetlen IT-vállalat sem uralja a piacot. A Herfindahl-Hirschman Indexből (HHI) származó piaci részesedés értéke kb. 535, ami az 1500-as küszöbérték alatt van. Ez azt jelenti, hogy nincs olyan vállalat, amely ezen iparágban jelentős piacvezető szerepet töltené be.

2. táblázat. A top 10 IT vállalat nettó árbevétele és HHI indexe 2018-ban. Az összes árbevétel = 7958 millió EUR.

Top 10 informatikai vállalat	Nettó árbevétel (millió EUR)	Piaci részesedés (%)	Koncentrációs arány (%)
Magyar Telekom Nyrt.	1534	19.28	19.28
Magyar Posta Zrt.	624	7.84	27.12
Telenor Magyarország Zrt.	529	6.65	33.77
Vodafone Magyarország Mobil Távközlési Zrt.	470	5.91	39.68
UPC Magyarország Telekommunikációs Kft.	240	3.02	42.7
NISZ Zrt.	196	2.47	45.17
DIGI Távközlési és Szolgáltató Kft.	147	1.85	47.02
SAP Hungary Kft.	111	1.34	48.36
NNG Kft.	105	1.32	49.68
Invitel Távközlési Zrt.	78	0.98	50.66
Összesen	4034	50.66	HHI: 535

Forrás: Saját szerkesztés az EMIS adatbázis alapján, 2019.

Kutatásunk során az IT iparág vállalatainak koncentrációját is megvizsgáltuk. A 2. táblázat alapján négy informatikai vállalat határozza meg a halmozott piaci részesedés 40% -át. Ez alapján az IT iparágat oligopol piacnak tekinthetjük, hiszen a vállalatok kis számban vannak jelen, viszont ennek ellenére meglehetősen nagy piaci erővel rendelkeznek. Az alacsony koncentráció szerint egyetlen társaság sem uralja a piacot. A vállalatok jelenleg nem tudnak összejárni az árakat illetően, ezáltal a vállalatok többsége akadályozza a magasabb nettó árbevételeket.

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Mahajan (2006) korábbi kutatásának hipotézisét, mely szerint a mobiltelefon-szolgáltatókat oligopólium piacnak kell tekinteni, az eredményeink alátámasztják. A szolgáltatók folyamatosan változtatják az árakat, ami hatással van a többi vállalati ár meghatározásában. Ezen iparágban jelenleg is verseny folyik a fogyasztókért, ezért a piaci ingadozásokra reagálniuk kell a vállalatoknak.

Habár az informatikai vállalatok száma az elmúlt két évben csökkent, az össz árbevételük ennek ellenére mégis nőtt. Az IT-társaságok által 2018-ban elért összes nettó árbevételt a 3. táblázat tartalmazza.

3. táblázat. Informatikai vállalatok összes nettó árbevétele 2018-ban.

Statisztikai módszerek		Árbevétel (millió EUR)
Átlag	Statistic	10.50
	Std. Error	72.12
Std. eltérés	Statistic	71.86
Variancia	Statistic	5164.75
Ferdesség	Statistic	21.7
	Std. Error	0.077
Csúcsosság	Statistic	563.06
	Std. Error	0.155

Forrás: Saját szerkesztés az EMIS adatbázis alapján, 2019.

Az informatikai társaságok összes bevétele 2018-ban átlagosan 10,5 millió EUR, szórása pedig mintegy 72,12 millió EUR. A ferdeség kimondja, hogy az informatikai társaságok összes jövedelmének nagyobb része meghaladja az összes bevétel átlagát. Az informatikai vállalatok többsége átlag alatti jövedelemmel rendelkezik. A csúcsosság alakmutatószám értéke pedig meghaladja az 500-at, ami azt jelenti, hogy az eloszlás a normálhoz képest magasabb. A vizsgálat alapján tisztázódott, hogy néhány IT vállalat jóval magasabb bevétellel rendelkezik, mint az iparágban az összes többi vállalkozás.

5. KÖVETKEZTETÉSEK

A nem is olyan régen a forradalmian új és áhítattal csodált informatika ma már a vállalati működés központi részévé vált és fontos szerepet tölt be a vállalatok életében. Habár a piacok folyamatosan változnak, a profittermelés, mint központi cél, változatlan marad. Az IT iparág teljesítménye a piac összetettsége és a sokoldalú tevékenysége miatt nehezen mérhető, viszont vizsgálatunk során használt két módszer segítségével sikerült a piaci részesedét tekintve eredményre jutnunk.

Kutatásunk során megvizsgáltuk az informatikai vállalatok piaci szerkezetének alakulását. Eredményeink között megemlíthető, hogy jelenleg több mint 1000 informatikai és kommunikációs vállalat működik Magyarországon, közülük mintegy öt adja a nettó árbevétel legnagyobb részét. Habár az elmúlt években csökkent az informatikai vállalatok száma, árbevételük mégis nőtt az oligopol piacnak köszönhetően.

Kutatásunk során megállapítottuk, hogy az IT piacon nincsenek domináns vállalatok, viszont a legnagyobb bevételt a távközlési szolgáltatók generálják, amelyek hazánk vezető vállalatai közé tartoznak. Az oligopol piacon az egyes társaságok stratégiája hatással van a többi IT

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szolgáltató stratégiájára is. Az árak és a szolgáltatások meghatározásakor a verseny erősödésével a piaci ingadozásokra rövid időn belül reagál a többi vállalat, aminek köszönhetően a fogyasztók hasonló áron, hasonló termékekhez juthatnak.

Úgy véljük, hogy az elemzés eredményei gazdagították a korábbi kutatási ismeretünket. A tanulmány hozzájárulhat az informatikai vállalatok piaci szerkezetének kezdetleges leírásához.

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**A ZÖLD ELLÁTÁSI LÁNCOK KOORDINÁCIÓJÁNAK
SAJÁTOSSÁGAI
CHARACTERISTICS OF THE COORDINATION OF GREEN SUPPLY
CHAINS**

Faludi Tamás

PhD hallgató, Miskolci Egyetem, Gazdaságtudományi Kar, Vezetéstudományi Intézet,
szvft@uni-miskolc.hu

ÖSSZEFOGLALÁS

A tanulmány bemutatja a zöld ellátási láncok kialakulásának történetét, illetve bemutatja, hogy milyen kritériumoknak megfelelnie egy zöld ellátási láncnak, vagyis mi a különbség egy klasszikus és egy zöld ellátási lánc között. Manapság egyre nagyobb fontossággal bír az ellátási láncok koordinációjának kérdése. A cikk bemutatja a koordinációs típusokat, kifejezetten a szerződéstípusokkal történő koordinációs jellemzőkre koncentrálva. Javaslatot tesz a zöld ellátási láncokon belül alkalmazható szerződéstípusokra.

SUMMARY

This paper introduces the history of green supply chains as well as what are the criterias of a green supply chain, so what are the differences between a classic and a green supply chain. Nowadays the coordination of supply chains is getting more important issue. The paper also introduces the types of coordination, especially focused on the coordination with different types of contracts. It makes a proposal to the potential contract types which can coordinate the green supply chains.

1. BEVEZETÉS

Napjaink egyik legnagyobb problémája a környezetterhelés csökkentése. Egyes országok által bevezetett klímapolitikai intézkedések a károsanyag-kibocsátás csökkentésére irányulnak, melybe beletartozik a szén-dioxid kibocsátás csökkentése, a műanyag jellegű anyagok számának csökkentése – mely nagyrészt csomagolóeszközként is megjelenik. Ezen intézkedések nagyrésze a vállalatok működésére is hatással vannak. Ennek okán már nem csak a civil szférában próbál teret hódítani a környezettudatosság, hanem a vállalati szférába is egyre jobban beszivárog. Nem csupán a károsanyag-kibocsátás okoz problémát, hanem az, hogy a Föld energiakészlete véges, ezáltal különböző alternatív megoldásokra van szükség ezen források helyettesítésére.

Egyre több vállalat alkalmaz valamilyen szintű környezettudatos eljárást – akár a szelektív hulladékgyűjtést, alternatív erőforrások alkalmazását, inverz logisztika vállalati folyamatokba történő integrációját is megemlíthetjük. Amennyiben ezek a vállalatok egy ellátási láncot alkotnak, akkor ezt a láncot 'green supply chain'-nek, vagyis zöld ellátási láncnak nevezzük.

Az ellátási lánc vállalatok hálózatát jelenti, mely a hatékony együttműködést és információ-áramlást biztosítja, valamint a vállalatok értékteremtő folyamatait integrálja. Ha mindegyik lánc tag az ellátási láncon belül környezettudatosan viselkedik, és környezetet minimálisan vagy egyáltalán nem terhelő folyamatokkal működik, akkor ezt az ellátási láncot nevezhetjük zöld ellátási láncnak.

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Az utóbbi 20 évben – nem csak a zöld ellátási láncoknak, hanem általánosan elmondható, hogy – az ellátási láncok, hálózatok együttműködő partnereinek a száma nagymértékben megnőtt. Emiatt a növekedés miatt fontossá vált az ellátási láncok koordinációja. A koordináció történhet puha tényezőkkel – melyek a viselkedéstudományi módszereket vizsgálják –, illetve kemény tényezőkkel, melyek között napjaink egyik legjobban kutatott ágazata a szerződésekkel történő koordináció lett.

A tanulmány célja bemutatni, hogy mik a zöld ellátási lánc ismérvei, valamint milyen szerződéstípusok alkalmazhatóak a leghatékonyabban egy zöld ellátási lánc esetén. Szakirodalmi feldolgozás segítségével összegzem, hogy milyen koordinációs mechanizmusokkal rendelkeznek az ellátási láncban használt szerződéstípusok, majd megvizsgálom egy gyakorlati példán keresztül, hogy milyen szerződéstípusok alkalmazhatóak egy zöld ellátási lánc esetén.

2. A ZÖLD ELLÁTÁSI LÁNCOK KONCEPCIÓJA

Nagyvonalakban már az 1960-as és 1970-es években jelentkezett a környezettel történő tudatosság fontosságának kérdése – először a környezeti menedzsment keretein belül. Később a környezeti menedzsment és az ellátási lánc-menedzsment fejlődésével egyre közelebb került egymáshoz a két diszciplína, melyek később tulajdonképpen egyesültek (Miskolcziné, 2017). Az egyesülésnek és a rohamos léptékű fejlődésnek köszönhetően a 2000-es évek elején merült fel az zöld ellátási lánc első igazi fogalma, mely Zsidisin és Siferd nevéhez fűződik. Ekkor még környezettudatos ellátási lánc menedzsmentként említette (ESCM – environmentally conscious supply chain management), melynek lényege az volt, hogy az egész ellátási lánc-menedzsment területén olyan intézkedéseket, akciókat terveztek, melyek kifejezetten a természeti környezet megóvására irányultak (Zsidisin-Siferd, 2001). Ezt a szemléletet egészítette ki 2005-ben Beamon (2005), aki hozzátette, hogy a vállalatok által gyártott termékek és a vállalatok folyamatainak is figyelembe kell venni a környezet megóvását, akár közvetett, akár közvetlen módon kifejtett hatását.

2008-ban Carter és Rogers publikációjában már fenntartható ellátási lánc menedzsmentként hivatkoztak rá. A szerzők szerint a jövedelmezőség is fontos szerepet játszik a fenntarthatóságban is, ezért kombinálni kell a társadalmi és környezeti kritériumokkal. Harms 2011-ben meg is határozta, hogy melyek azok a területek, melyek Carter és Rogers elméletének gyakorlati implementációját segíthetik:

- stratégia
- szervezeti kultúra
- kockázatmenedzsment
- átlátható működés.

A legelterjedt elnevezés mégis a zöld ellátási lánc menedzsment lett, napjainkban is ezt a kifejezést használják legfőképpen. Miskolcziné (2017) értekezésében viszont ezt a menedzsmentet is két részre bontja:

- az egyik megközelítés definiálja a célokat, a célok eléréséhez szükséges eszközöket, tevékenységeket
- a másik megközelítés magát a zöld ellátási lánc menedzsment definícióját határozza meg a menedzsment területei segítségével.

Ez azt jelenti, hogy ha ezeket a területeket meghatározzuk, akkor voltaképpen megkaphatjuk a zöld ellátási lánc definícióját, és a zöld ellátási lánc menedzsment feladatkeretét. Tehát, ha a

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következő tevékenységek, területek egy ellátási láncon belül megtalálhatók, akkor az ellátási láncot zöld ellátási láncnak tekinthetjük.

Inverz logisztika, melynek célja az ellátási láncon belül felmerült hulladék összegyűjtése, feldolgozása, újrahasznosítása (Beamon, 1999).

Terméktervezés, melynek során újrahasznosítható energiát kell használni, csökkenteni szükséges a szennyező anyagokat már a terméktervezés során is (eco-design) (Miskolcziné, 2017).

Beszerezés esetén érdemes környezetirányítási rendszerek standardjait alkalmazni – például az ISO 14001, EMAS, OHSAS 18000, RoHS, illetve az ökocímke is információt biztosít arról, hogy az adott termék milyen környezeti hatásokat csökkent, és milyen környezetvédelmi funkcióval bír (Miskolcziné, 2017; Kovács-Pónusz-Kozma, 2018; Bándi, 2014).

Gyártási eljárások során a kiválasztott alapanyagoknak is minimális környezeti hatással kell rendelkezniük, illetve a gyártási folyamat során is a lehető legkisebb károsanyag-kibocsátásra és hulladékképződésre kell törekedni a vállalatoknak, fokozott figyelmet és felügyeletet kell biztosítani ezen anyagokhoz, illetve amennyiben megoldható, kontrollálni kell a veszélyes anyagok jelenlétét – például vízzel történő tisztítás vegyszerek helyett, energia hatékony eszközök alkalmazása (Miskolcziné, 2017).

Disztribúció során a legfontosabb szempont a környezetkímélő csomagolások alkalmazása (Miskolcziné, 2017).

A disztribúció után, ha a körforgás újból elkezdődik a disztribúciót követően és az inverz logisztika feladatkörébe tartozó, például csomagolásból származó hulladékot vagy magát a csomagolást összegyűjti, feldolgozza és újrahasznosítja, akkor ezt az ellátási láncot tekinthetjük zöld ellátási láncnak.

3. ELLÁTÁSI LÁNC-KOORDINÁCIÓ SZERZŐDÉSEK SEGÍTSÉGÉVEL – SZAKIRODALMI ÁTTEKINTÉS

A szerződéseket a koordinációs eszközök közül a kemény tényezők közé soroljuk. Céljuk, hogy kezeljék a lánctagok közötti dominancia különbségeket, melyek elsődleges konfliktusforrásként azonosíthatók. A dominánsabb lánctag számára kedvezőbb feltételrendszerű szerződést alakíthatnak ki, ez feszültséget okozhat a lánctagok között, ronthatja az információáramlást – akár szándékosan is –, és így az egész ellátási lánc hatékonysága is csökkenhet. A szerződéstípusok ezt a különbséget hivatottak egyensúlyba hozni, a láncon belüli konfliktusok számát csökkenteni. Meghatározzák az együttműködés feltételeit (Coltman et al., 2009).

Sok kutató, szerző foglalkozik a szerződések vizsgálatával, azok koordinációs erejével. Léteznek számszerű példákat tartalmazó publikációk, melyek az adott szerződések használatának előnyeit és hátrányaira próbálják reprezentálni. Léteznek tradicionális szerződések, és vannak olyan kutatók, akik ezen típusok tulajdonságainak kombinálásával hoznak létre újfajta, hibrid szerződéseket, melynek célja, hogy a legjobb megoldást megtalálják a koordinációs kérdésre (Katok-Pavlov, 2013; Molnár, 2017; Zhang et al., 2013).

Jelen tanulmány elsődleges célja bemutatni azokat a szerződéseket, melyek kifejezetten zöld ellátási lánc koordinálása céljából alkalmaznak. Ehhez viszont első körben foglalkozni kell a zöld ellátási lánc működési jellegével – vagyis azzal, hogy a zöld ellátási lánc centralizált vagy

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decentralizált elrendezés szerint működik. A szakirodalom mindkét esetet vizsgálja (Sazvar et al., 2014; Song-Gao, 2017; Ling-Xu, 2019). Centralizált elrendezés esetén egy, a láncot összefogó döntéshozó irányítja a teljes láncot, melynek célja az egész lánc összprofitjának a maximalizálása, míg decentralizált elrendezésben működő láncnál a tagok a saját profitjuk maximalizálására törekednek (Giannoccaro, 2018).

Ezen információk alapján a következőkben megvizsgálom, hogy milyen szerződéstípusok alkalmazhatók a zöld ellátási lánc esetében.

4. ZÖLD ELLÁTÁSI LÁNC KOORDINÁLÁSÁT SEGÍTŐ SZERZŐDÉSTÍPUSOK

A zöld ellátási lánc koordinálása esetén jelentős párhuzamokat találhatunk a tradicionális láncok koordinálására alkalmas szerződéstípusokkal. Ez azt jelenti, hogy alapvetően ugyanazok a szerződések állnak rendelkezésre, mint a klasszikus esetekben. Szakirodalom alapján a preferált szerződések azonban inkább csak az árbevétel-megosztási szerződés, és a nagykereskedelmi árszabás.

Árbevétel-megosztási szerződés esetén a kiskereskedő által realizált árbevételen osztozkodnak a lánc tagok. A profit alapját a centralizált ellátási láncban elérhető összprofit adja, ez egészül ki az előre megállapodott arányú árbevétellel.

Nagykereskedelmi árszabás esetén általában a nagykereskedő, vagy a gyártó az, aki megszabja az értékesítés árát – ezen az áron tudja a vevő, a kiskereskedő megvásárolni a számára szükséges mennyiségű árut.

A legfőbb kérdést igazán az jelenti, hogy mindezen szerződések milyen elrendezésű ellátási láncokon belül működnek. Az eredmények alapján tulajdonképpen ettől függ, hogy mennyire erős a koordinációs erejük.

A költségeket ugyanakkor egy zöld ellátási láncnál befolyásolja, hogy a megfelelő minőségű termék vagy szolgáltatás a lehető legalacsonyabb környezetterhelés mellett valósuljon meg.

Ezen információk alapján felállítottam egy kritériumrendszert, melynek segítségével egy egyéni rangsort állítok fel. Ez a rangsor megmutatja, hogy melyik elrendezés és melyik szerződéstípus a legalkalmasabb egy zöld ellátási lánc koordinálására. A kritériumrendszer tartalmazza a láncban egyénileg elérhető maximális profitot, a lánc összprofitját, a zöld termék piaci árát, értékesítési árát.

Basiri és Heydari (2017) publikációban számszerű példával támasztotta alá, hogy centralizált elrendezésben működő zöld ellátási lánc sokkal hatékonyabban működik, mint a decentralizált. Tehát szükséges egy bizonyos szintű együttműködés a partnerek részéről, hogy eredményesen tudjanak működni ellátási lánc szinten is, nem csak egyenként. Modelljünkben egyfajta nagykereskedelmi árszabást alkalmaznak, ahol az árérték függ a láncban található – ezáltal – zöld terméknek nevezett produktum minőségétől. Számításuk alátámasztja, hogy a centralizált elrendezésben minden tekintetben magasabb profitot lehet elérni, illetve a piaci ár is az optimálisához közeli értéket vesz fel.

Hasonló eredményre jutott Swami és Shah is (2013). Nagykereskedelmi árszabáson alapuló szerződést alkalmazó centralizált és decentralizált elrendezésű ellátási láncot vizsgáltak szintén számszerű példával alátámasztva az eredményeket. Konklúzióknak ugyanazt fogalmazták meg, mint Basiri és Heydari – a centralizált elrendezés kedvezőbb feltételeket biztosít és koordinációs ereje is nagyobb, mint az ellenkező esetben.

Song és Gao (2017), Zhong és Hu (2014), valamint Bai és szerződtársai (2017) is az árbevétel-megosztási szerződést és annak koordinációs erősségét vizsgálták zöld ellátási lánc tekintetében. Összesítve a kutatók eredményei összhangban vannak – centralizált elrendezés preferált, illetve az árbevétel-megosztási szerződés képes koordinálni az ellátási láncot. Zhong és Hu (2014) ezt azzal is kiegészítette, hogy összehasonlította a nagykereskedelmi árszabás szerinti feltételekkel, melynek eredménye az lett, hogy az árbevétel-megosztási szerződés

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jobban teljesít koordináció szempontjából, amennyiben a felek inkább kockázatkerülő magatartást tanúsítanak.

A kapott eredmények és az összegyűjtött információk alapján az általam felállított rangsor a következőképpen alakul.

A zöld ellátási lánc koordinációjának szempontjából a decentralizált elrendezés egyáltalán nem javasolt működési forma. Centralizált elrendezésben érhető el a leghatékonyabb és legeredményesebb működés, melyet a magas koordinációs erővel rendelkező árbevétel-megosztási szerződés biztosít. Ebben az esetben a profit is kielégítő a tagok számára, az összprofit is maximalizálható – magasabb érték érhető el, mint más esetben, illetve a piaci árak is ebben a kombinációban a legkedvezőbbek.

Tehát egy zöld ellátási lánc koordinációja szempontjából a legjobb választás a centralizált elrendezésű lánc, ezen belül is az árbevétel-megosztási szerződés alkalmazása. Kevésbé ad jó eredményt, de még koordinálni mindig képesek a nagykereskedelmi árszabás alapján született megállapodások. A legkevésbé a decentralizált elrendezés vezet jó eredményre, így javasolt a zöld ellátási láncok centralizált elrendezés szerint történő működése.

5. A ZÖLD ELLÁTÁSI LÁNCOK TÁRSADALMI JELENTŐSÉGE

A vállalatok különféle módon történő ösztönzésével elérhető, hogy még több tradicionális ellátási lánc váljon teljesen környezetkímélő eszközöket alkalmazó zöld ellátási láncná. Ez pedig példaértékű lehet. Amennyiben egy vállalat felhívja a figyelmet az általa értékesített, forgalmazott, gyártott termék környezetvédelmi funkcióira, magának a gyártás környezetkímélő folyamataira, illetve azt, hogy miképpen csökkenti ezáltal a környezet terhelését, az fel fogja hívni a fogyasztók, de akár a leendő üzleti partnerek figyelmét is. Némely civil csoportnak, de akár a vállalati szférában működő partnereknek, versenytársaknak pedig innovatív új dolgok kialakulásának a táptalaját is jelentheti ez a folyamat – és itt gondolhatunk újfajta környezetkímélő technológiára, a társadalom számára is értékes és hasznos termékekre, folyamatokra.

6. ÖSSZEFOGLALÁS

A zöld ellátási láncok manapság egyre nagyobb fontossággal bírnak, hiszen környezetvédelmi jelentőségük miatt több vállalat is vállalja a környezetterhelés csökkentésével járó változtatásokat. Ez nem csak a fenntartható fejlődés érdekében történik, hanem egyáltalán a Föld és az emberiség jövője miatt is.

A zöld ellátási láncok tagjai kivétel nélkül ügyelnek a környezetterhelés csökkentésére és csak környezetkímélő anyagokkal dolgoznak. Azonban, mint mindegyik ellátási láncnál felmerülő probléma, a koordináció. Hiszen ezen láncok is folyamatosan gyarapodnak, egyre több az együttműködő, kooperáló partner száma, amit egyre nehezebb menedzselni úgy, hogy az eredményesen működjön minden tekintetben. Erre a kutatók körében manapság egyre nagyobb érdeklődésnek kitett szerződéstípusok általi koordináció jelenthet potenciális megoldást. A kutatások alapján a legjobb a tradicionális szerződések használata, azonban kardinális kérdést jelent az ellátási lánc elrendezése. Ha centralizált módon működik a lánc, akkor eredményesebben és hatékonyabban működhet, mintha minden egyes tag a saját érdekeit érvényesítve kizárólag a saját profitjuk maximalizálására törekednének – vagyis ha a lánc decentralizált lenne.

Ezen láncok vállalatai által alkalmazott módszerek, folyamatok további – akár társadalmi jellegű – innovációk létrejöttét is elősegíthetik.

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RELATIONSHIP BETWEEN ENVIRONMENTALLY CONSCIOUS BEHAVIOR AND INFLUENCER MARKETING

Márton, Fehér

PhD student, University of Miskolc, Faculty of Economics, Institute of Marketing and Tourism

ABSTRACT

My submission was basically inspired by the publication of Neulinger, Piskóti (2014), who wanted to explore whether family behaviors are influenced by children's perceptions and perceptions of the topic - in this case, environmental issues.

This mentality has changed in my case to the extent who influences the children who influence parents. Another issue that worried me was whether domestic influenza marketing is already on a level to educate young people on environmentally conscious behavior. In my research, I explore the state of influencer marketing in Hungary, first in general, then in topic-specific terms, and then suggest other online marketing tools.

Kotler, Kartajaya, Setiawan (2017) In their book Marketing 4.0 Moving From Traditional to Digital, Variety Magazine reports that, among 13-18 year-olds, YouTube is more important influencers than movie stars. This fact, in my opinion, is a double-edged blade, as it has at least as many advantages as disadvantages. It can be beneficial because if the influencer lives his or her life according to appropriate moral values, and if he or she also tries to move along that line in his or her sponsorship, it will bring about a positive attitude change in his or her young life. Of course, this is also true on the other side, if it influences the child in the wrong direction, it can have a serious impact on his or her socialization, because until the child has a certain worldview, it becomes very easy to influence.

In summary, people are open to this type of content. I also think that this is something that many content providers have to take into account, because on the one hand it is important and on the other hand it sends a very good message to young people

All in all, I think that content producers have a lot of power in their hands that they need to start applying much better, because such an initiative has a very positive effect on young people.

1. RESEARCH QUESTIONS AND METHODOLOGY

In my article, I will present an observational research, which is basically one of the "softest" versions of qualitative research, but in order to examine the actual online behavior of current videographers, it was necessary to use such a methodology.

The observation is that I typed a few keywords into the YouTube search engine and looked at the number of views that the video has, and looked at what topics I found in the comments and videos suggested by the YouTube algorithm. After watching these videos, I evaluate the sponsorship, maybe look at the reasons behind making the video, and examine the relevance of the video.

As marketing theory and practice become more and more intertwined with online marketing, especially with the aforementioned Marketing 4.0, which includes value-driven marketing, which is important in the online space, it is necessary to compare the theory with practice.

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In order to carry out my research in a particular line, I have written research questions that would be:

-Is influencer marketing an effective marketing tool for developing environmentally conscious behavior?

- Is the topic adequately represented by the various influencers?

Of course, before going into research, it is first thing that is necessary to do is a secondary research, which is essentially more information about the current state of influencer marketing in our small country and what influencer marketing is.

2. SECONDARY RESEARCH

As influencer marketing is an even more rapidly developing and relatively fresh thing in online marketing, there are not too many professional articles on this topic, however, I have tried to collect some.

Basically, influencer marketing is not a recent thing, as they have previously used television or movie stars to showcase a product, because if a star is using the product we will want it. The term used today, however, is a little different than before, as nowadays they have become "commoners", to whom, as I said earlier, we are more attentive than ever before.

According to an article by *John Hall (2017)* in Forbes, influencer marketing is a type of marketing where companies use opinion leaders to target the audience they want to reach.

The author also divides influencer marketing into two parts:

- Paid reviews, here are the cases that we classically interpret, that is, when a person is paid by companies for advertising space, this version is common nowadays.

- The other ones is called unpaid reviews it is when the reviewers are not paid for the ad, but simply form reviews of a product or service. The most common version of this is when people get a product and express their opinion, but companies don't pay for it.

I think it is important to pay attention to this division, because during my research I found exactly one of the videos in the latter category.

After watching many different, mostly practice-oriented, presentations, I have synthesized that the essence of influencer marketing is that companies can successfully reach their target audience through social media, with relatively easy and practically lower waste rates than any other platform. This is also logical as followers of a given social media personality form a relatively homogeneous group.

In Hungary, as in any foreign country, there is a trend of increasing use of influencers for everything. If you look around and just type in Google search marketing trends for 2019, you are sure that 80% of your articles will be about influencer marketing, which is not surprising for the reasons mentioned above.

According to Daniel Farkas, an online marketing and influencer marketing expert, in the next few years, interest in influencer marketing will not decline, but it will grow, and even today the rise of micro influencers who do not have hundreds of thousands of followers, but in their area they are considered experts and even opinion formers can be seen.

3. PRIMARY RESEARCH

As I mentioned earlier, the point of my research was to look at how environmentally conscious behavior appears among influencers. To do this, I looked primarily at "youtubers" and secondly did a hashtag research on the aforementioned but not elaborated keywords.

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I typed the following keywords into both YouTube and Instagram:

- environmental awareness
- environmental protection
- Sustainability

After typing these words into the search engines, I arbitrarily picked out the videos there that have high viewership, or come from a content producer who is clearly in the influencer category.

4. ENVIROMENTAL AWARENESS

On this topic, I used a video from a channel called HeyJulie. This channel currently has 17,000 subscribers, the video I chose is "Why you can live a greener life + tips," which was viewed by 8,000 total and 51 comments.

In this video, Julie talks about how to live more consciously, listing products that can lead a greener life. Take the problem of plastic pollution as an example of straws, and suggest it in his nearly 16-minute video. It also suggests ways in which people in our environment can be a little bit greener.

Most of the contributors very much agree with the influencer and even share their own experiences. The style of the contributors suggests that the lady is engaged in a serious community-building activity, and that the majority of her viewers and commentators come from the younger age group.

If you look at instagram numbers on this topic, 1561 posts were made with this hashtag, and on average, different users give tips on what to do in an environmentally aware way.

5. ENVIROMENTAL PROTECTION

The next "youtuber" I chose was Fruzsi Viszok, who is currently the country's fourth most influential influencer and his video is "10 Tips to Save the World." In this video, Fruzsi talks about alternatives to various pollutants and harmful substances. This is mainly due to such practical solutions as the aforementioned metal drinking straw or the question of the shopping bag. Basically, Fruzsi's audience is young people between the ages of 13 and 25, which is evident in the comments below the videos and explained in an earlier presentation that I was lucky enough to attend. If you look solely at the numbers, your video received 116,000 views and 490 comments from its own 371,000 subscribers.

The contributors will give users additional tips and discuss how they will implement environmentally conscious behavior in their daily lives.

The hashtag analysis comes up again, which means 5045 posts, and most of the images here show the steps taken to protect the environment.

6. SUSTAINABILITY

When I started the research, I wouldn't have thought that I would find such a particularly good video on this topic. Fortunately, with Pingvin harcos is was successful: "Sustainable? It's beautiful!" The channel has 289,000 subscribers, the video has 20,600 views and 76 comments. This is an influencer marketing video that nobody actually sponsored in cash, but Lego sent a package to its partners to highlight sustainability, exactly how limited our stock is. In this video, you will unpack and ponder this package for 16 minutes on environmental issues.

It's basically for a different kind of target audience than the top two, since they both target women with their own videos, while the target of Pingvin harcos are men, including the player

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community. It is good to see in the comments that the audience is nonetheless very interested in the subject, and many have written that they should make these types of videos more often. There are 2976 posts on this topic in the world of Instagram.

7. SUMMARY AND ANSWERS FOR THE RESEARCH QUESTIONS

Turning to my research questions, I think that influencer marketing could be a very effective tool in this case, but it is not well represented.

So my first research question is:

Is influencer marketing an effective marketing tool for developing environmentally conscious behavior?

In my opinion influencer marketing can be a great tool because it can reach a large audience and if someone is interested in these topic, they can be influenced quite easily.

My second question is:

Is the topic adequately represented by the various influencers?

The answer to that is pretty twofold for me, though the content producers listed are delivering very high quality and valuable messages in their videos, but unfortunately there is very little on this topic because it is not a simple topic to consume.

A válaszom tehát összességében az, hogy nincs megfelelően reprezentálva ez a téma.

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MONEY OR LIFE? – THE FINANCIAL LITERACY OF STUDENTS*

Kitti, Fodor

PhD student, University of Miskolc, Institute of Economic Theory and Methodology
fodor.kitti@uni-miskolc.hu

SUMMARY

Nowadays the existence of financial literacy and the development of financial literacy received a special attention. This is a really interesting and current theme, therefore a lots of studies was made about financial literacy in the recent years. Unfortunately the situation in Hungary is not very favorable because the level of financial literacy of the Hungarian population is not outstanding. This statement is supported by several Hungarian and international researches. For example, according to the S&P survey, 46% of the Hungarian population is considered to be financial illiterate.

Because of the interestingness of the topic, I thought I'd do my own survey about financial literacy. The focus of the research are the young people. For the study I used a questionnaire survey. Multivariate statistical analysis was used to evaluate the results. This maybe can help to answer which factors are related to financial literacy, which factors contribute to a higher level of financial literacy, or which characteristics can be used to group young people with higher or lower levels of financial literacy.

1. INTRODUCTION

Social innovation is a popular research topic today. However, answering what forms of social innovation can come from lending and finance is not easy. During my researches I have come to the conclusion, that the appearance of social innovation in these areas is possible, inter alia, through financial literacy. However, financial literacy is such a concept, which does not have an uniform definition and does not have a generally accepted method for measuring. One well-known and widespread definition is from the Hungarian National Bank, according to which financial literacy is “such a level of financial knowledge and skills, with the help of which individuals are able to identify the basic financial information necessary for making their conscious and cautious decisions. Then after obtaining this information, they are able to interpret it and on its basis they are able to make a financial decision and assess its possible financial and other consequences for the future.” (MNB-PSZÁF, 2008. p1.)

According to an OECD study, "financial literacy is the combination of awareness, knowledge, skills, attitudes and behaviors needed to make financial decisions and ultimately needed to individual financial well-being. (Atkinson–Messy, 2012, p14.)

Kovács and co-workers (2014) were performing a survey on the financial literacy of high school students. Their conclusion is that the financial literacy level of high school students cannot be considered good and their knowledge cannot be put into practice. Several areas proved to be critical, including credit knowledge.

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These examples are only a part of the researches from the last years because many researchers have been interested in this topic in recent years, which has led to creating numerous studies. It is also important to mention that Kovács et al. stated that financial literacy encompasses both knowledge, attitude and numeracy

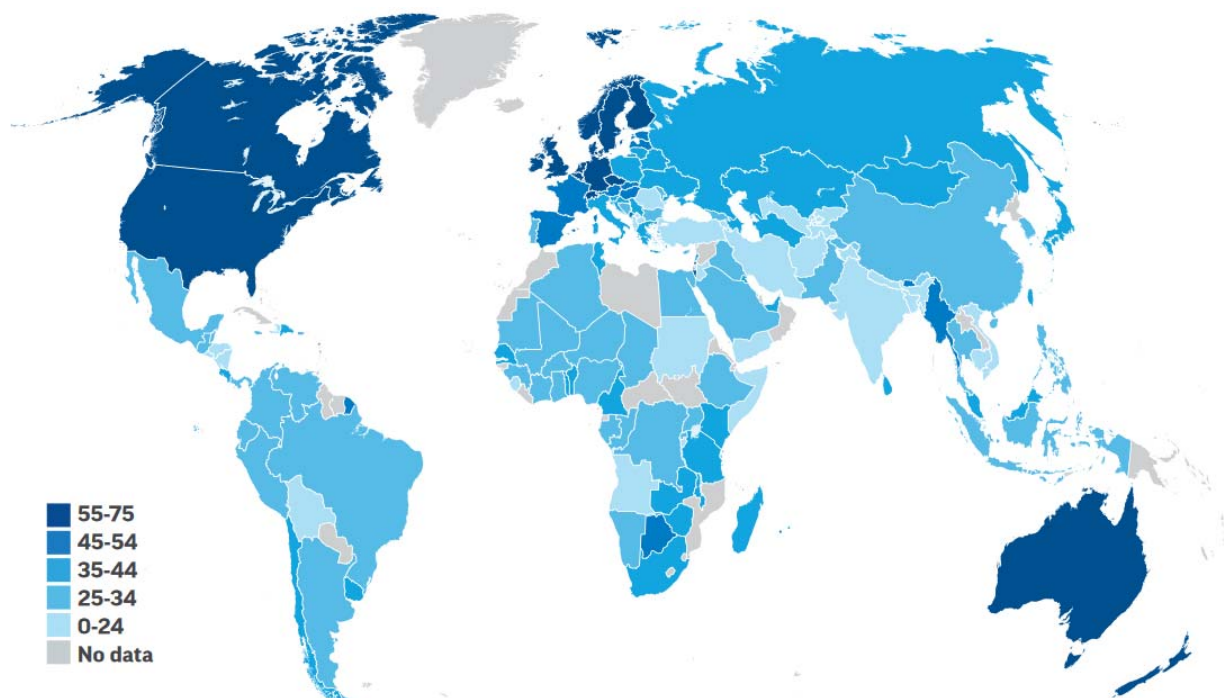
So it is clear, that financial literacy is a broad concept that consists of several components. Of these components I will address two, which are knowledge and attitude.

The question may arise, where the first memories about money come from and whether they matter. Everybody's first experience with money come from childhood. Nagy-Tóth (2012) summed up the ideas of Roedder John (1999) and Mindy (2002) that people acquire the competencies needed to spend money through consumer socialization, and these attitudes largely determine the relationship to money. Thus, attitudes acquired in childhood have an impact on later borrowing and repayment. However, these childhood behaviors can only be changed slowly and hardly. Based on these, it can be said that financial literacy is a very slowly developing characteristic, which takes a long time to develop.

As I mentioned, there are a lots of international surveys on this topic, but I would highlight the S&P Survey of 2014, which is the basis of my research. „This survey is the world’s largest, most comprehensive global measurement of financial literacy.” (GFLEC) More than 150,000 adults in over 140 countries were participated in the survey. Of the survey’s results I would highlight only a few, which are really important and interesting:

- women have a lower level of financial literacy
- only 33% of the adult population are financially literate
- this ratio is 30% for women and 35% for men
- 46% of the hungarian population is financial illiterate

The map below illustrates the level of financial literacy in each country.



1. Figure: Global variations in financial literacy (% of adult who are financially literate)
Source: *Financial Literacy Around the World: Insights from the Standard & Poor’s Ratings Services Global Financial Literacy Survey* (Klapper et al., 2015 p7.)

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It is clear, that many European countries have achieved outstanding results, including:

- Denmark
- Finland
- Germany
- the Netherlands
- Norway
- Sweden
- the United Kingdom

At least 65% of the adult population in these countries are financially literate. The worst values are in the area of South Asia.

2. DATABASE AND METHODOLOGY

My research was based on a questionnaire survey, in which the survey participants answered nearly 50 questions. The evaluation of the complete questionnaire is not feasible in the context of one study, so in this study I will address the section based on the S&P financial literacy survey. This survey was mentioned in the previous chapter. This part of the questionnaire includes 5 questions, which are covering 4 areas:

- compound interest
- *risk diversification*
- inflation
- *numeracy (interest)*

According to the survey such people was qualified as financially literated who answered correctly in at least 3 areas, so in this area I followed the characteristics of the original survey.

2.1. Database

The questionnaire is currently beyond the first round. I would like to extend the survey to students from other faculties, grades, and universities in the future. 124 economics students participated in this first round. So this was the base of my research.

2.2. Methodology

During the analysis I used simple, descriptive statistical analysis and cluster analysis. Cluster analysis means the grouping of items that are similar to each other, and its goal is to categorize the observed units into homogeneous groups. Basically, this is a technique for exploration, and there is no such thing as a best result and there is no prior information about the grouping of observed units. With cluster analysis, we can choose from a hierarchical and non-hierarchical method, or we can combine the two. Both methods has its own advantages and disadvantages, and I strove to perform my analysis keeping this in mind.

One of the benefits of hierarchical cluster analysis is that it is possible to determine the number of clusters, but it is a slower process that is sensitive to outliers, so the last two are definitely disadvantages. The non-hierarchical method is faster and less sensitive to outliers, but the number of clusters must be predetermined and it depends on the sequence of observed units.

„In hierarchical clustering, clusters which have the lowest distance or have the greatest similarity are grouped together, but the merge rule needs to be defined ...” (Hajdu, 2003., p115.)

We can choose inter alia from the following methods:

- Nearest neighbor
- Furthest neighbor
- Centroid clustering
- Ward's method etc.

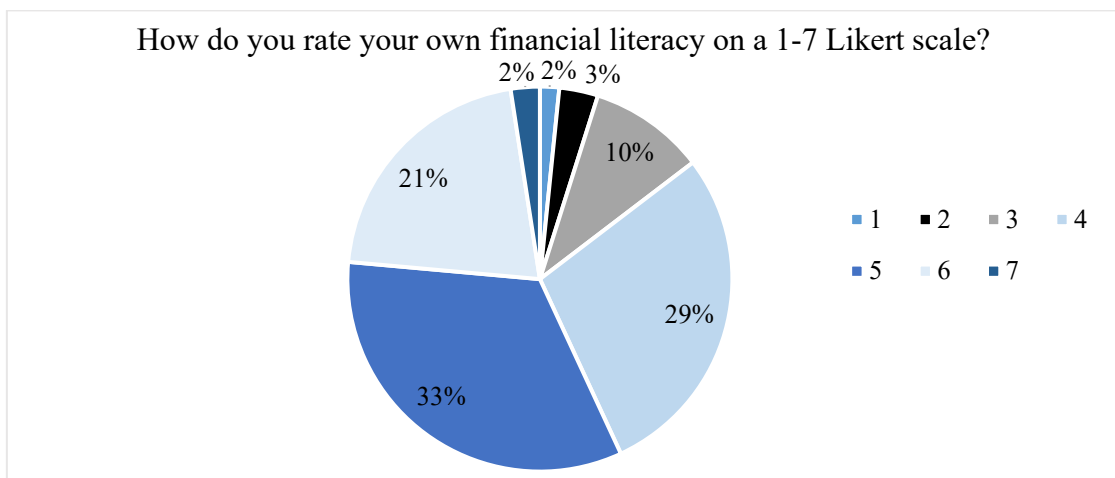
In this case I chose the Ward's method. Ward method is one type of variance methods. This method „is the most frequently used method in case of economic calculations. It can be used in case of metric variables. The cluster to be merged is the one which will minimize the increase in within-group variance. (Sajtos – Mitev, 2007) This method tends to create small and similar-sized, homogenous clusters. The method is sensitive to outliers, therefore we should eliminate them.” (Varga-Szilágyi)

3. RESULTS

In this chapter I briefly summarize the results of my research.

3.1. Self-esteem

The first question in the survey focused on the students' self-esteem. They had to answer, how they rate their financial literacy on a 1-7 Likert scale. 2 respondents rated their own financial literacy as bad, that means, they chose a value of 1, and 3 students rated their own financial literacy as extremely good, that means, they chose the value of 7. The average self-esteem value is 4.62. The partitional ratios of the answers is illustrated in the pie chart below.

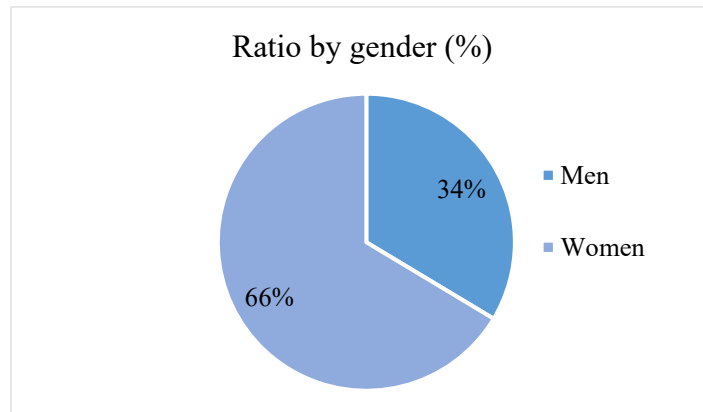


2. Figure: The partitional ratios of the answers of the first question (%)

Source: Own editing

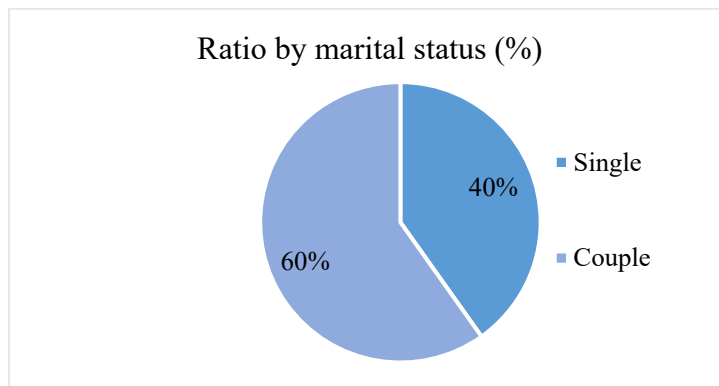
3.2. The characterization of the database

The survey include several socio-demographic questions. Regarding the age of the respondents it can be stated, that the mean of the age is 21.65 years. The youngest was 19 years old and the oldest was 31 years old. Studies in previous years have found that people under 24 have a poor financial literacy. Further previous research has found that women's financial literacy is lower than the financial literacy of men. The partitional ratios of the database by gender is illustrated in the figure below.



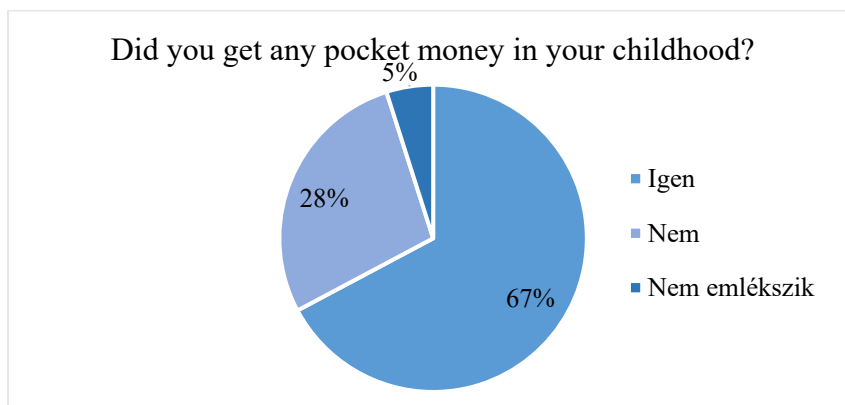
3. Figure: Ratios by gender of participants
Source: own editing

In addition, singles have a lower financial literacy than childless couples. The ratios by marital status is illustrated below.



4. Figure: Ratios by marital status
Source: own editing

As mentioned above, knowledges acquired during childhood are important, so I considered it important to analyze whether the participants received pocket money during their childhood, encouraging them to learn how to handle money. Two-thirds of students received pocket money in their childhood.



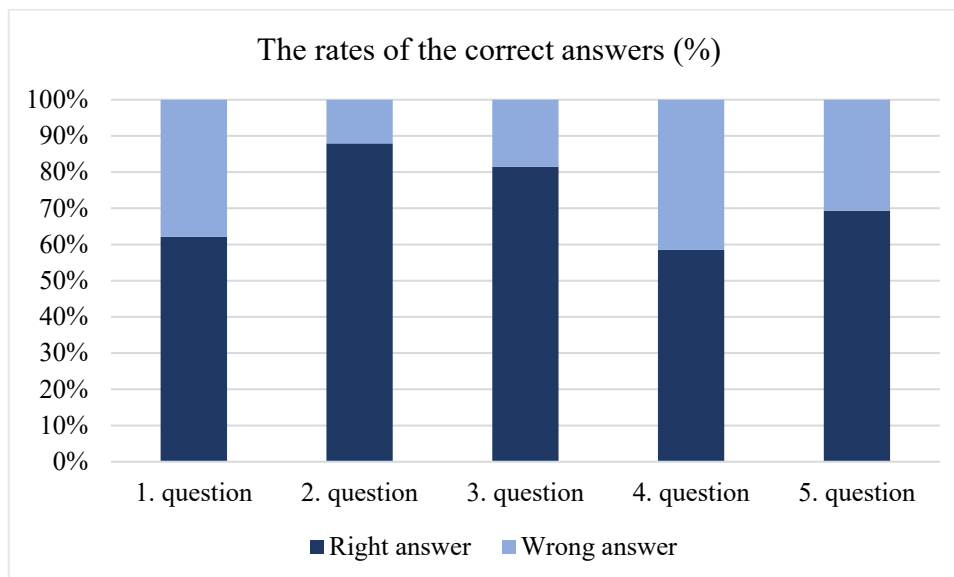
5. Figure: Ratios of the answers
Source: own editing

Examining the composition of families, it can be stated that in most cases 3-4 persons live in a household and most of the participants have 1 sibling.

3.3. Rate of correct answers

In this paper is the focus on the questions, which are related to the S&P Survey. This means 5 questions.

The first question assessed knowledge of interest rate calculation. 62% of the respondents answered correctly and 2 abstained. The other participants' answers were incorrect. The second question was also about interest rate calculation and 88% of the respondents answered correctly. With the help of the third question I evaluated the risk diversification of the respondents. Based on this, 81% of the respondents are more risk averse. Of the 5 questions, the least good answer was given to the questions related to inflation. Only 58% of the respondents answered correctly. The last question assessed numerical abilities by simple interest calculation and 69% of the respondents chose the correct answer. The chart below summarizes the rates of correct answers to each question



6. Figure: The ratios of correct answers

Source: own editing

Based on these answers, 67% of the respondents can be considered financial illiterate.

3.4. Financial attitude

The second part of my research focused on the examination of financial attitudes, in which I applied cluster analysis. During the analysis I had special attention to the examination of the conditions, which includes the handling of the outliers, the appropriate scaling, and the examination of the correlation of the variables.

I performed the cluster analysis along 3 variables

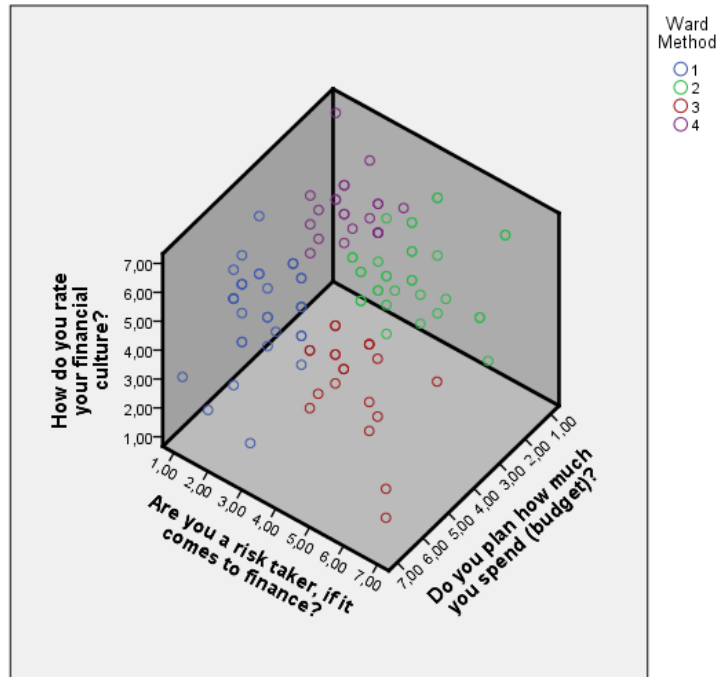
- How do you rate your financial culture?
- Are you a risk taker, if it comes to finance?
- Do you plan how much you spend (budget)?

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The values of all three variables were given on a scale of 1-7, so there was no need for standardization. The outliers were identified by a cluster analysis method called the nearest neighbour.

In the analysis, my choice was hierarchical cluster analysis, within I applied the Ward method, and at the end of the analysis I validated with non-hierarchical cluster analysis. Based on the dendrogram created by the Ward method, I came to the conclusion that creating of 4 clusters would be ideal.

As the 3-D scatter shows, the groups are nicely separated.



7. Figure: 3-D scatter about clusters

Source: SPSS output

For the validation my analysis I used non-hierarchical cluster analysis. As the cross table shows, similar groups were generated as in the case of the ward method.

Ward Method		* Cluster Number of Case Crosstabulation				Total
Count		Cluster Number of Case				
		1	2	3	4	
Ward Method	1	36	0	0	0	36
	2	0	5	0	28	33
	3	0	0	21	0	21
	4	0	23	0	0	23
Total		36	28	21	28	113

8. Figure: Crosstabs for the validation

Source: SPSS output

3.5. Name and characterization of clusters

For the first cluster is an average self-esteem value characteristic, so the members of this cluster thought, that their financial literacy is good and they have a same level for the satisfaction by their own financial situation. People in this group do not consider themselves to be a financial risk taker, but they do not make a budget for spending. This group has the lowest rate for pocket money received in childhood. The rate of women is high, but they are single. They acquire the necessary financial knowledge from the school. They are the **“common single women”**.

In the second cluster, they rated their financial literacy better than the people in the first cluster, but were less satisfied with their financial situation. In addition, they consider themselves to be a financial risk taker, but spend time for planning their budget. The highest self and family income is characteristic for this cluster. Loans are rated most favorably in this group, some people said, that credit is a good thing. This participants received the highest rate for the financial literacy. The mothers of the participants are high educated. A lots of groupmember has pocket money in childhood. They acquire the necessary financial knowledge from the school and from the internet. They are the **“rich planners”**.

The third cluster had the lowest self-esteem score and they were least satisfied with their financial situation. The most risk-taking individuals are in this group and budgeting is the least characteristic for this cluster. They have the most negative opinion on credit assessment. This cluster has the lowest rate for financial literacy, the had average 2 correct answers. Parents in this group are the least educated. The proportion of urban residents is high. They were the least familiar with the concepts of lending and finance. They acquire the necessary financial knowledge from the family. They are the **“distracted ignorant”**

Members of the fourth cluster consider their own financial culture to be the highest, and they are most satisfied with their financial situation. They do not consider themselves risk-takers and spend the most time preparing their budget. This cluster has the lowest self and family income, but they had pocket money in childhood. This group has the highest rate of women and the lowest rate of singles. Nearly 50% come from village. They knew the concepts of lending and finance the best. They acquire the necessary financial knowledge from school, family and internet. They are the **“informed rural women”**

4. COMPARISON OF RESULTS, CONCLUSION

In previous international research, 46% of Hungarians were considered financial illiterate, but other studies have concluded that the financial literacy level of the younger age group is lower, so in my opinion this may be partly due to the less favorable value.

The cluster analysis confirmed the results of previous years. Higher-income, wealthier people have a higher level of financial literacy and their parents has a higher educational qualifications. Furthermore, the group with higher financial literacy was characterized by the fact that it was mainly pairs. But unlike previous research, this group had a high rate of women.

I think the above highlights the features between established clusters and financial literacy, and there was some new features which have not been showed in previous research.

In total it is unfortunate that the level of financial literacy of this students is disappointing, considering that they are economics students. I think that in the future, this area must be given special attention, as today's young people can be the decision-makers of the future. However, this requires innovation.

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HUNGARIAN GREEN WEBSHOPS: DO THEY DO EVERYTHING FOR THE ENVIRONMENT AND IN FAVOR OF THE CUSTOMERS?

Gergő, Hajdu

PhD student, Enterprise Theory and Practice Doctoral School, University of Miskolc

SUMMARY

Nowadays, the unsustainability of global consumption trends is not subject to debate in major forums, however, there is an increasing attention on finding and implementing solutions, and in this context it can be stated, that solutions require an interdisciplinary approach. The literature highlights the role of businesses in environmental protection. This article is based on a problem-solving research specifically focusing on the online activities of Hungarian "webstores" selling eco-friendly products with the help of the PSD (Persuasive Systems Design) system by Oinas-Kukkonen and Harjumaa in order to see if they are doing everything they can in order to distribute environmentally friendly products and to maximize their revenue. The PSD model by the literature is considered to be a comprehensive framework applicable primarily to software. Its elements fall into four groups: priority task support, dialogue support, credibility support and community support. The examined webstores do not fully meet all the points, even though the PSD model has been already known for years. They perform best in credibility support, however in terms of primary task support and dialogue support not all design principles are applied. The most neglected field is the so-called group of design principles that are community-supported, as only one or two of them are applied and they are not used uniformly by all webstores, despite the fact that the community could provide reference and promote the spread and popularization of green products.

1. INTRODUCTION

Back in 1978, Malthus already voiced some concerns that supplying the increasing population of our planet with food cannot be resolved in the future. The issue of sustainability has become a timely and widely discussed subject nowadays. Sustainability is now the subject of numerous research projects and publications. In the 1970s, it was the Club of Rome which first had publications regarding the matter. They said that according to even the milder approaches, the existing global consumption trends questioned the sustainability of our current way of life (Csutora and Hofmesiter 2011).

In Europe, the European households have largely contributed to the climate change and to air and water pollution. Furthermore, the role of the European people cannot be diminished regarding the excessive land exploitation in agriculture and the amount of waste produced. If no changes occur in our consumption habits worldwide, the need for resources on our planet will quadruplicated in the next 20 years.

At the same time, the way and the energy efficiency of producing the goods are closely related to the extent of the decrease of our natural resources. The previously mentioned and widely accepted statements were confirmed by the European Commission's June 2009 publication¹. The slogans that we are all responsible and we all must do something about it might already be

¹ European Commission (June 2009): Sustainable consumption and production are challenges for all of us <http://ec.europa.eu/environment/pubs/pdf/factsheets/scp/hu.pdf> June 4, 2019

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quite commonplace but they are true. Of course, if the “good deeds” yield direct profits, the willingness to do something will very likely be much greater. The companies selling their environment-friendly products online will do good for the environment by selling only green products and also by giving people enough to live on and by realizing huge profits.²

In the present article, I am analyzing how much the Hungarian e-commerce websites selling environment-friendly products utilize the various techniques and principles. I am doing so in order to find out whether these websites use all the means to achieve the economic and social-environmental goals.

2. LITERATURE OVERVIEW

2.1. Hungarian consumers and environmental awareness

As it was published by hvg.hu in 2012, referring to WWF Hungary, the ecological footprint of Hungary can be considered low in Europe but it is not sustainable even in this way. Also, as the data of the non-profit Global Footprint Network³ show, there have not been any positive changes in the trends. Because of this, the Hungarian consumption trends should change too (Tóth et al, 2009). Therefore, all the surveys and research projects examining the environmental awareness behavior changes among the Hungarian population are of course well-founded and already have a long past. In 2009, Majláth wrote that the international and Hungarian research projects (such as Valkó, 2003; Vay, 2004; Gulyás, 2002; Csurgó, 2002) show that the environment-friendly attitude has become more and more widespread and stronger among the people. However, the author also adds that the consumption habits have not really changed. This can be considered to be a serious problem. To resolve or diminish this issue, marketing experts must play a serious role by using the increasing number of tools and knowledge of the discipline but with a completely new mindset and approach (Vágási et al, 2006 and Piskóti et al, 2012).

2.2. The relationship between economy and environmental awareness

As it is well-known, the basic motive of a private capital-based business is to gain capital-based profits (Illés, 2014, page 75). According to Kotler and Keller (2012), marketing as a corporate activity largely contributes to achieving this goal. In accordance with their business interests, the companies use traditional marketing to influence the market and the consumers and encourage them to increase their consumption. Because of this, many look at traditional marketing quite negatively since this seems to be against sustainability and encourages people to consume excessively and to produce more waste (Piskóti et al, 2012). Since this traditional approach is not very good, new approaches are born. What is more, there is a definite demand for a paradigm shift (Piskóti et al, 2012). In light of this, several experts regard environmental awareness as an equally (or maybe much more) important factor in business competition compared to such factors as costs or quality. One such model is the model by Piskóti (1999) where environmental awareness is also an economic interest in the operation of a company (Nagy 2008). Due to the limitations in length, it is not possible to give a detailed description of the Piskóti-model here. However, it must be emphasized that it is not only the government which tries to direct the business sector toward environment-friendly production and products but the increasing environment awareness of the consumers also has a similar effect. This

² A non-profit company can also run a green webshop, as we will see and the profit can be spent on environmental activities.

³ <https://data.footprintnetwork.org/#/>

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influencing behavior can be seen in the reverse direction as well, since the manufacturers and service providers also try to direct the customers toward environment-friendly consumption. and the retailers offer their products in accordance with this. The previously described model presents environmental awareness as a competition factor which applies to all economic operators in general or at least it is a preferred state to be achieved.

In my opinion, the pioneers of this principle are the webshops selling environment-friendly products. The best thing would obviously be if everyone sold environment-friendly products. Currently, the above-mentioned companies fit the Piskóti-model in the simplest and clearest form. In case of these online retailers, the business interest is the same as the social-environmental interest. In such a case, increasing the volume of sales is not only excusable but, since it coincides with the medium-term and long-term interests of mankind, it can be expected of them to influence their consumers in various ways.

2.3. The role of online stores in influencing consumer decisions

The task of environmentally conscious marketing is to make sustainable consumption patterns more popular and to operate companies in a more environmental-friendly manner (Vágási et al. 2006). Traditional marketing techniques can be applied to the success of green products (Piskóti et al. 2012 based on Andearsen 1995). Vágási et al. (2006) emphasize the importance of proper marketing communication and add that the two most important elements (of this) are, on the one hand, providing more information for consumers and, on the other hand, differentiating them from non-environmental-friendly products. Tools for differentiation include trademarks (such as green cedar) or even environmental product declarations ("EDP"), according to Vágási and his co-authors.

The website is also a market influencing, online tool, since it can be classified as marketing communication (Horváth and Bauer 2013). Kopcsay (2013) shares this view, but states that it is not only the part of "promotion" among the elements of marketing mix, but it also enriches the sales, and thus it can be stated that e-commerce is a multi-purpose online platform. It is designed to build trust in the consumer. Kopcsay emphasizes trust building mainly because of the risks of e-shopping, however, there may be distrust of the green product itself, thus, trust building as a task can be interpreted in a broader sense, too. It is also an important task for an online store to gain publicity (Kopcsay 2013), which in our case also promotes the awareness of environmental-friendly products - in line with the ideas of Vágási et al. (2006).

The role of influence marketing and its tools (in the sense of the above, the webshops, too) according to Józsa (2014, p. 341):

- “Creating a Need, Raising Demand (...)
- Information services (...)
- Preparation of purchase decision (...)
- Assessment of alternatives (...)
- Raising consumer awareness (...)
- Improve customer attitude towards your business, product or brand (...)
- Increase sales or market share in certain target groups (...)
- Invitation to the re-purchase of the product, reminder (...)”

The former obviously can be applied to any consumer goods. Therefore, these tasks are also needed to spread the consumption of environmental-friendly products - with special emphasis on raising awareness, changing attitudes, and raising awareness as tasks. In this case, influence primarily affects “demand modifications”, that is, the environmental-friendly alternative is chosen instead of the traditional product (Meffert and Kirchgeorg 1993, Hofmeister Tóth et al. 2010).

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In terms of the spread of environmental-friendly products Kopcsay's statement (2013) is favorable, that states that a smaller business can compete with a larger online store, that is, it can achieve success in high sales volume, thus spreading organic products, to the detriment of traditional products.

3. THE RESEARCH METHOD

3.1. Research method and sample composition

My research is a problem-solving research based on the assumption that Hungarian owned, Hungarian language online stores offering a variety of organic products do their best to maximize their sales and profits. I chose the observation method as a research methodology. First of all, I observed the structure, the functions, the usage of colors, the content, the related emails, etc. of the web pages. Certain information cannot be collected by this way, so on the one hand, I have registered to see all the features and content, and then I have made a trial purchase, that is, I have ordered some products from these merchants. I have examined the participation in social networking sites in just a few justified cases, the websites were the main subjects of investigation.

Table 1: The subjects of observation

Name of webstore	Product range	Website link
Zöld Bolt	Environmental-friendly, recycled, energy and water saving lifestyle products, publications.	http://zoldbolt.hu
Zöldpolc	Environmental-friendly, recycled, energy and water saving lifestyle products.	www.zoldpolc.hu
Zöld Zug, the store of Eco Services Foundation	Environmental-friendly, recycled, energy and water saving lifestyle products.	http://zoldzug.hu
Zöldabc	A website mainly dedicated to selling environmental-friendly detergents, food, toys, cosmetics	www.zoldabc.hu
Kenderkóc	Environmental-friendly detergents, craft materials, green publications	www.kenderkoc.hu/
Öko kuckó	Environmental-friendly detergents, natural cosmetics, food, fair trade products.	http://okokucko.hu/
Biokiskert	Bio certified seeds, plant protection for organic gardening	www.biokiskert.hu
Zöld Mami	Environmental-friendly detergents, natural cosmetics, food	http://zoldmami.hu
Zöldövezet	Environmental-friendly detergents, natural cosmetics, baby accessories	http://zoldovezet.sup erwebaruhaz.hu/

Source: self-editing, based on Google search and energiakozossegek.hu Download time and place:

http://www.energiakozossegek.hu/files/GreenDependent_termekjelek%20es%20beszerzesi%20helyek_6.pdf 2019. 04. 04. 13:37

I have collected the list of observed online retailers from the site of [energiaközösségek.hu](http://energiakozossegek.hu) (downloaded on 04.04.2019). It was complemented with other web stores offered by the first

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two pages of the Google search page (there was no overlap). The addition was justified as the original spreadsheet contained several pages (eg. the page of Csudadió Kft. and Kislábnyom.hu) which I did not find suitable. (The page of Csudadió was being refreshed, so I did not think it should be ethical to analyze it in depth. The kislábnyom.hu is merely an intermediary site - with tips, links - and it is not a classic webshop.)

I used 'environmental-friendly products' as a search term. The monitoring of communication activities of the webpages itself (more specifically the organizations) took place between April 4 and June 4, 2019. The trial purchases were made between April 22 and April 27, 2019. (The orders have been completed within 2 or 4 days.)

There are profit and non-profit businesses between the observed web site operators. The table below lists the subjects of observation (name of business, product range, link).

3.2. Presenting the applied methods of analysis

The PSD (Persuasive Systems Design) model was devised by Oinas-Kukkonen and Harjumaa (2009) and the list of the requirements it includes, as they themselves put it, can be used primarily for software products. Its purpose is to enable a given system to persuade and motivate their users, in other words, to change the user's attitude and actions⁴ (Oinas-Kukkonen and Harjumaa 2009).

According to Wiafe and Nakata (2012), the PSD model is a comprehensive framework of persuasive and influencing techniques. Consequently, since we are talking about a quite well-known and comprehensive model, I consider this model suitable for analyze e-commerce websites and to reveal any problems about them.

The planning elements in the PSD model consists of four groups: primary task support, dialogue support, system credibility support and social support.

The planning principles of the primary task support help users to perform the primary task (this is shopping in the case of a webshop). Dialogue support gives some kind of feedback to the users. Its purpose is to make the user carry out some preferable action.

The following group of the planning principles includes the principles of credibility support. These principles tell us about the requirements that a given system must meet in order to be more credible and persuasive.

The fourth group is social support. By applying these principles, the users of a website can be motivated with social effects and influences (Oinas-Kukkonen and Harjumaa, 2009). This model also has other aspects. However, as observers, we can only take the 28 principles of the four groups into account due to the limitations in length. Due to the lack of internal data, we are not able to give a detailed description either. A detailed description of the model elements can be found in a table in the Appendix. During the research, I primarily wanted to find out whether a given planning principle exists in some form at the e-commerce websites. The quality of implementation was set to be only as a secondary goal.

Alhammad and Gulliver (2014) adapted the PSD model specifically to online retailers. I translated and applied this adapted checklist to observe and evaluate the subjects of my research. To make the application of the list clear and easy, I did some fine tuning and added some specific examples from Nkwo and Orji (2018). The authors used the model to compare amazon.com and an African webshop.

⁴ According to Orji and Nkwo (2018), the PDS model can be used in several areas besides e-commerce, like helping education (Orji et al, 2018), to develop health awareness (Orji-Moffat 2016) and to promote and help physical exercise activities (Orji 2016).

3.3. Research limitations

The research is limited by the fact, that the evaluation is performed with a single model and that this evaluation contains subjective elements, as well. Since this model has multiple layers, each of the elements are overviewed only generally due to the limitations in length. The research does not go deeper into the details. Furthermore, I primarily focused on the existence of the principles. Their sophistication, implementation and improvement have been regarded only as secondary factors. The research was carried out by one person, so the evaluation depended on a single person's perceptions. Another limitation is that some of the subjects got into the sample with the help of Google's search engine algorithm. And above all this, I also examined the websites and the e-mails received from them and if necessary, their social network profiles (Facebook), but not the internal data or their customers' opinions or behaviors. The observation lasted only 60 days (I made the purchases between April 4 and June 4, 2019) and I purchased only one product at a time from the subjects.

4. RESEARCH RESULTS

4.1. Primary task support

This section is to support the sales in the first place. However, only some of the examined e-retailers met all the requirements.

Reduction: the examined webshops keep the principle of reduction, that is, they simplify the processes (like the process of shopping) as much as possible in a modern manner. The examined webshops keep up with other online shops in this aspect (however, there are some minor deficiencies, such as the improper placement and animation of the "Add to cart" button in case of the Zöld Zug).

Tunneling: the examined webshops do not meet the requirements in the process of attitude change, they do not offer free samples, nor downloadable applications, nor any coaxing products or product pyramid schemes. Some of the content marketing tools, like blogs, articles or free e-books can be found, but due to the contents and limited application, these tools are used as coaxing products in a limited way. The free e-books offered when the users sign up is not a widespread practice either (except for the Zöldpolc and Biokert webshops). According to the interpretation of Nagy (2005), some people might not trust environment-friendly products and might think these products are not efficient enough (for example, if a washing powder does not produce an ample amount of foam, people might think that it is less capable of removing stains). If the customers did not only have an opportunity to try these products but they would also be encouraged to try them, it might be a lot easier to persuade new customers about the capabilities of such products. The law (downloaded from fogyasztovedelem.kormany.hu on April 21, 2019) allows the consumers to send back the ordered products but the shops might as well loosen the conditions (for example, they might pay the return costs). Of course, it should be examined whether such steps would significantly increase the sales. If it is possible, then it should be considered how to minimize the chance of misuse.

Tailoring: I was able to access all the information and content in the standard way, that is, during the research period I did not receive recommendations based on my interests (in spite of the fact that I looked at certain products and goods more frequently and my purchases were also limited to a certain type of products).

Personalization: During the research period, I hardly ever received any personalized offers or suggestions (price quotes or product packages). As for personalized products, I never received any recommendations or offers during this period. It is quite possible that if the observation had

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lasted longer and if I had purchased more products, my experience would have been different. It may be stated as a fact, that certain websites openly state that they give personalized offers after a number of purchases.

Self-monitoring as a principle or an opportunity can be found in case of most websites, I have examined. That is, I could backtrack all my previous purchases, the wish list and also the products I added to the cart, but did not purchase.

Simulation is all about demonstrating the effect achieved through the use of the product. However, I was not able to find even a calculator, an application, a table, a chart or anything similar that would show the consumer's ecological footprint is reduced in case of the energy-efficiency meters or any other products. I could not see any virtual fitting rooms, product demo videos or galleries. In my opinion, it is important to demonstrate that the product will satisfy the consumer's needs (it is fashionable, efficient etc.) and they are really environment-friendly.

Rehearsal as a principle was not present at any of the examined websites. I could not find any videos or descriptions that would show the process of online shopping or how a customer can return a product. Above all this, it is not possible to read into the books.

4.2. Dialogue support

These points are really about the positive feedback and confirmation from the system since they can make a positive impression about it.

Praise: Apart from the general and polite wording and the use of imperative (anonymized) sentences, I have not seen any wording or image (like a smiling face or a thumb up etc.) which would give a very positive feedback. I saw one acceptable example at the Zöldbolt where they use expressions like "minta mókus" (pattern squirrel). Such nice expressions evaluate the customers based on their purchase intensity (the starting phrase is "rookie squirrel"), Another good example is the phrases used in the reply e-mail of the Zöld Mami ("it is a great pleasure for us", "you can sign in right now" or "fantastic").

Rewards: Only some of the examined online retailers apply the so-called rewards system. That is, they have special offers, discounts, gifts etc. for the regular customers. This belongs to the tools which promote sales (and within this, it is rather a price-related tool). According to (Dankó, 2008), the shops do not use all the opportunities offered by these techniques.

Reminders: Only one or two of the examined webshops sent me e-mails reminding me of some events or special offers or calling for a new purchase. Thus, this practice is not widespread, or I should have purchased more products or maybe these webshops send such reminders more infrequently than the time period while this research was being carried out (from April 4 to June 4, 2019). The "similar products" reminder can be found at several websites. I find the "abandoned cart" function used by the Zöld Mami quite ingenious. I added several products to the cart but did not purchase any of them. A few days later, I received a reminding e-mail that said that "one click and the contents of the cart could be mine".

Suggestion is not uniformly present at these webshops but some of the high-quality websites I examined gave suggestions while I was browsing their website. Some of them displayed even so-called upsell suggestions (a pop-up window appears just before placing an order with more product suggestions). In my opinion, this tool should also be used to encourage consumers to try out other products (if one buys a product, they will surely try it and the trial would help to make the consumers accept these product categories).

The principle of *similarity* is uniformly present. This might be explained with the fact that I analyzed only Hungarian websites. Thus, all the websites use a similar language and they all display the prices and totals in Hungarian Forint.

In spite of the fact that I did not have access to internal data or consumers' opinions, the principle of *liking* is more or less present, since these websites usually have clear-cut, appealing

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and easy-to-handle user interfaces (the Zöldzug foundation shop is an exception because the website is quite old-fashioned).

Social role (consulting, offering help): blogs are used by several websites. In these blogs people share quite useful information with one another. The presence of these websites on social network sites (like Facebook) is not uniform: some of them are more passive while the others are more active. The latter ones were able to build up significant background communities. The members of these communities are able to share advice with others. Some of these websites are doing an exemplary “publishing” job on their blogs and on Facebook, as well. This activity helps people with their shopping. This social activity greatly helps with building communities, however, in case of the other points (as we will see) this is not common. The same applies to the presence of the “frequently asked questions” (FAQ) section. Even if some of these websites have an FAQ section, in many cases it is not easy to find, one has to spend some time looking for it.

4.3. System credibility support

The use of these planning principles is definitely characteristic of the observed green e-commerce sites, since almost all of them met nearly all the criteria. The Hungarian legal regulations and practicality have a great deal to do with this.

Trustworthiness: these websites can be regarded to be reliable, since the firms, associations or foundations running these websites are registered in Hungary. These organizations operate the websites and handle the data protection, shipment and other terms and conditions according to the Hungarian legal regulations. Last, but not least many of these websites have real shops, too. I have not seen any of these webshops publishing false data. The one thing that might be questionable is whether some of these sites sell really environment-friendly products, since they do not use eco-labels (I am going to write about this later).

Expertise: the websites are frequently updated and they publish valuable and reliable information, articles, so they apply this principle.

Image authenticity: generally speaking, image authenticity can also be found at these websites, since their appearance is adequate, the contents reflect the context.

Surface credibility: These websites contain relevant information about their operating organizations, the customer service can be accessed in several ways (phone, e-mail, chat). So, this principle or at least the feeling of it is there. So, we can assume that the organizations behind these websites are real, they are able and willing to ship the ordered products.

Authority: in case of these websites, we can find data on the registering courts and the authorities which are assigned to deal with disputes, since this is also a legal regulation for commercial organizations in Hungary.

Third-party endorsements: The use of trademarks, logos and eco-labels is present almost everywhere. On one hand, these are not placed on every product, on the other hand, they are not present on every website. I consider this as a serious problem because, as it is written down in the literature (Vágási et al, 2006), the trademarks are extremely important in the case of the environment-friendly products.

Verifiability: I have not found examples for this principle, I have not observed that this would be a common practice at these websites. In such a case, the websites could confirm their credibility with external sources (URLs, foreign publications, by providing links to manufacturers’ websites, a video by the manufacturer or even by an influencer). The examined websites probably have limited resources. Nevertheless, an independent recommendation might have a serious and positive effect.

4.4. Community support

During my observations, I have found that this is the most neglected area of the pages examined, even though it would be particularly important for companies representing such an issue that there should have no shortcomings. Essentially, these points can give credibility, but at a higher level, they can achieve this by existing consumers and, ideally, by their community. Nagy (2005) states that reference groups that exhibit positive consumption patterns can accelerate the transition to environmental-friendly products. However, if we do not give as many opportunities as possible to the emergence and development of reference groups, as suggested by the neglect of the design elements connected to Community support, this will naturally not help the spread of organic products.

Community Learning: For this the element that will be discussed later, the comments section, ratings, and community pages found under the products give opportunity. Unfortunately, this element is very rudimentary or non-existent, even though, for example, a forum could not only build a community, which in itself also could be a serious weapon in raising environmental awareness, but such an interface would also allow customers to share detailed product experience that would gain validity, thus the product's ability to fulfill the needs would be demonstrated and proved in a so-called quasi-independent manner.

If we look beyond the webshop and extend our investigation to social networking sites, this is not an exemplary situation as many stores have neglected their profile page.

Community Comparison: The forum as such is not listed as a featured option in any site's menu bar, nor the top-performing buyers neither the actively commenters (reviewers) are announced there. The examined stores use two solutions instead of forum. The Facebook page can be found everywhere, but it's not an own interface, as we know it. The other solution, which cannot be found uniformly, is the comment interface under the articles, blog or article entries. In my opinion, they are less suitable for discussion and comparison. In summary, there are other options that fulfill the function of a forum, but they can replace it only moderately.

Normal Impact: During my observation I have seen in several cases that not only the starred or verbal reviews can be found alongside the products, but that we can search by ratings and popularity or filter, rank the products, which can help and encourage the more uncertain customers to make a decision and to give a try.

Community facilitation: I have not experienced at any online platform that the system would have shown what other specific users are buying or watching, how a particular user has rated the product and what the most recent reviews were. There was a function that "others have put these products in their cart, too", but it was also shown anonymously (cannot be linked to a user). Moreover, they did not encourage me to rate the product myself, I didn't feel that they tried to get me involved in the rating, (of course the possibility for rating can be found in several cases.).

Collaboration: It has been discussed earlier that there is no real forum, so comparison and customer collaboration is more difficult, customers can only do it on community sites or on the "hidden" comment interface found under the products or blog posts. In my opinion, a forum can create a "more closed" community and it is easier to find previous posts by its members. I suspect that superficial posts are more common on community pages, while on forums the more committed users can be seen where there is a direct moderator, which fact also favors quality and hence the spirit of collaboration.

Competition: it could be an excellent Sales Promotion tool, or even the auction too, mentioned by the author, for charity (environmental) purposes, or a public users rating system (based on purchase or comment). Many individuals have competitive spirits that is worth using. At the

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same time, playfulness can be potentially involved in competition, which can also positively advance the case. However, I have not discovered any such initiatives or practices.

Acknowledgment: I have found this design principle in no form, the best performing users are not published, although this point could also build credibility. In the case of “Zöldbolt”, the current system can be easily improved by publishing a list of "pattern squirrels" (of course, only with the consent of users).

5. CONCLUSIONS, SUGGESTIONS

During my observations, it turned out that the examined Hungarian e-commerce sites selling environment-friendly products do not apply all the tools defined by the PSD model elements to encourage the consumers to purchase and consume environment-friendly products. These web shops do not seek to acquire new customers in a deliberate and organized manner or encourage the old ones moderately to purchase more products from them. The groups including the 28 principles of the PSD model are the following: primary task support, dialogue support, credibility support and social support. The examined websites are the best at system credibility support, since the elements of this group are considered to be basic requirements nowadays. However, these sites have deficiencies in primary task support and dialogue support. The most neglected area is the social support. The examined websites apply only one or two of these elements and they do not do this uniformly. Social support might make this product category even more accepted and also bring new customers. I think it would be reasonable to examine the cause of the above-mentioned deficiencies. The causes might include the lack of resources and competence or cultural issues but these deficiencies might as well be the result of deliberate decisions.⁵ Since I was only making observations, it might be reasonable to perform interviews or surveys with the operators of the websites and the consumers as well. In my opinion, we should examine whether the sales volume of environment-friendly products would increase if these webshops applied all the elements of the PSD model. I assume that in this case it is obvious that the business interests and the environmental-social interests coincide. Thus, the use of the various persuasion techniques, marketing tools and online solutions is not only acceptable for the retailers selling such types of products but, in my opinion, it should also be a requirement.

Due to limitations in length, the elements of the PSD model are only outlined here. However, these elements, their effects, the possibilities of their further development might be examined both separately and also in comparison with other webshops.

Above all this, there are several more analysis and problem-revealing methods. These can be IT-related ones or they can be comparisons with the latest webshop-planning trends. I find it possible that by using different methods, we could reveal other problems or the findings of this paper may be confirmed. The final goal of these suggested examinations is to make the environment-friendly products more competitive, more popular, more accepted and more accessible through the tools of marketing and technology. By doing so, we may have a better chance to resolve our environmental problems.

⁵ The excessive consumption of environment-friendly products may also be harmful, therefore, the real solution would be the reduction of consumption (downloaded from energiakozossegek.hu, April 14, 2019). However, I think that the explanatory force of this viewpoint is quite doubtful, since the examined Hungarian e-commerce sites are poor at social support and do much better in the other 3 areas.

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APPENDIX

Design components of PSD model		
	Persuasion principles	Description and characteristics
Pr mary task support	Reduction	<i>Simplifies complex activities into easy tasks e.g. buy with one-click only</i>
	Tunnelling	<i>Guides users in the attitude change process by bringing them closer to the target behaviour e.g. Free trial signup.</i>
	Tailoring	<i>Tailors information based on users potential interests, usage context, or other factors relevant to a user group.</i>
	Personalisation	<i>Offers personalised content e.g. personalised recommendation based on previous purchase or rating</i>
	Self-monitoring	<i>Allows the customers to keep track of their performance or status e.g. order tracking or review previous history.</i>
	Simulations	<i>Provides means for observing the link between the cause and the effect, e.g. virtual fitting room or other effect monitoring/measurement, in the case of books: scan?</i>
	Rehearsal	<i>Provides means for rehearsing a target behaviour, e.g. short video clarifying the online buying process.</i>
Dialogue support	Praise	<i>Uses words, images, or sounds to give the user positive feedback</i>
	Rewards	<i>Offers users some reward for performing the target behaviour, e.g. online discounts, vouchers, etc.</i>
	Reminders	<i>Reminds the user about the target behaviour during the use of the website e.g. reminder email about sale event, offering new products based on previous purchase or rating</i>
	Suggestions	<i>Suggests products or services at the opportune moment. (e.g upsell recommendation at browsing or putting products into cart)</i>

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	Similarity	<i>Website imitates its users by using their language, date, and currency.</i>
	Liking	<i>Website has a look and the feel that appeals to its customers.</i>
	Social role	<i>Website adopts a role of social actor e.g. there is a community in the background, furthermore embedded conversational agent offering advice and assistance.</i>
Credibility support	Trustworthiness	<i>Provides the customers with truthful, fair and unbiased information, e.g. website clearly states privacy, shipping and returning policies.</i>
	Expertise	<i>Offers information showing knowledge, experience, and competence, e.g. website regularly updated, no dangling links or out of date information.</i>
	Surface credibility	<i>Website has a competent look and feel, e.g. the design reflects the context.</i>
	Real-world feel	<i>Provides information about organisation providing the services, e.g. provides clear customer service contact details like phone, post, or online chat.</i>
	Authority	<i>Website refers to organisation or people in the role of authority, e.g. quoting authority statements from authorised organisation or people.</i>
	Third-party endorsement	<i>Provides endorsements from respected sources e.g. security certificate logos from well-known security companies.</i>
	Verifiability	<i>Provides means to verify the accuracy of the website content via outside sources.</i>
Community support	Social learning	<i>Allows users to observe other customers' behaviour and outcomes. Users can get further information from other customers' evaluation. e.g. customer review board, showing what other users are experiencing, public ratings etc.</i>
	Social comparison	<i>Allows the customer to compare their own performance with other customers, e.g. customer review forum, or top performing customers. There is an incentive to move into higher positions with more purchases. Allows customer to compare own performance with other customers, e.g. customer review board.</i>
	Normative influence	<i>Provides means for gathering together customers who share the same goal or leverage, normative influence or peer pressure to increase the likelihood that a person will adopt target behaviour. E.g. filter by popularity or rating.</i>
	Social facilitation	<i>Allows users to discern other users performing the same behaviour along with them, e.g. what others watch and buy right now, displaying recent reviews, they are encouraged for rating.</i>
	Cooperation	<i>Allows customers to cooperate, e.g. customer review board- separately or under products.</i>
	Competition	<i>Provides means of competing with other customer, e.g. online auction or rating of users</i>
	Recognition	<i>Provides public recognition for users who perform their target behaviour, e.g. name of awarded people are published on the website.</i>

Sources: Self-editing, based on Oinas-Kukonen and Hajrumaa (2009), Alhammad and Gulliver (2014), Nkwo and Orji (2018)

EFFECTIVENESS ROLE OF LEADERSHIP STYLE IN VIRTUAL TEAMS PERFORMANCE

Dr habil István, Kunos

PhD, Associate Professor, University of Miskolc, Faculty of Economics, Institute of Management Sciences
szvkunos@uni-miskolc.hu

Somayeh, Kariman

PhD student, University of Miskolc, Faculty of Economics, Institute of Management Sciences
0036702446015,
somy2012kariman@yahoo.com

ABSTRACT

Globalization, both in a cooperative sense and a competitive sense, has changed the way organizations must do business. As businesses engage more frequently in activities such as foreign direct investment, and opening branches or satellites in other areas of the globe, it creates a multicultural environment that presents both opportunities in terms of creativity and innovation through the diversity of ideas, talents, and challenges in keeping teams and working units motivated and free of conflict. Nowadays, one of the main challenges facing leaders in a multicultural organization and environment is leading the virtual team. One of the characteristics of virtual teams is that they are geographically dispersed and communicate through electronic means which include team members from various cultures and nations. The greatest strength of virtual teams lies in brainstorming and developing project plans (Alonso and Wang, 2014). Developing trust among team members and maintaining morale were some of the greatest challenges faced in achieving success using virtual teams (Alonso and Wang, 2014). The quality of collaboration directly affects organizational outcomes and performance (Boughzala, and De Vreede, 2015). This makes forming effective teams and maintaining them an important topic for the organization, and the industry in general. The main purpose and objective of this paper aim to provide investigation effectiveness with the level of the leadership style (transformational and transactional) in the virtual teams, and how they would like to provide trust, integrity and cohesion among the members in the virtual teams and finally improve organizational performance.

Keywords: *Transformational leadership, Transactional leadership, Virtual team*

1. INTRODUCTION

1.1. Virtual Team

The virtual team are combined of geographically distributed individuals who work together via Information and Communication Technologies (ICT) to communicate and achieving an organizational goal (Bell and Kozlowski, 2002; Lipnack and Stamps, 1997; Townsend et al. 1998). One of the basic characteristics of the virtual teams is that members can be selected freedom and without any biasing. On the other hand, the virtual team also allow firms who use them not only to reduce the financial costs of organizing regular face-to-face meetings for all far way team members but also to reach the required competencies wherever they are located.

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Widespread using of virtual teams in organizational settings especially in the multicultural organization, given a significant growth of research for the management and leadership fields. Many studies were interested in dynamics and processes of virtual teams such as trust, integrity, leadership, communication, coordination mechanisms and performance (Anderson et al., 2007; Avolio and Kahai, 2001; Järvenpää et al., 1998; Maznevski and Chudoba, 2000). On the other hand, Dube and Robey (2008) believe that virtual team has some challenges such as working across different a time zone, differences in the use of technology and differences of national culture. Furthermore, based on the media synchronicity theory, only two types of communication encompass virtual team interaction: synchronous and asynchronous. Synchronous interaction occurs when team members communicate at the same time (in real-time), such as through teleconferencing, video conferencing, or chat sessions (Avolio et al., 2001a). “Synchronous” communication media allow individuals to work on the same task, with the same information, at the same time (Baker, 2002; Dennis & Valacich, 1999). On the other hand, “Asynchronous” communication would have happened at different and various geographic times zone. As tasks become more complex and require interdependence, reciprocal communication, and feedback among team members, synchronous media are found to be more effective than asynchronous media (Bell & Kozlowski, 2002; Maruping & Agarwal, 2004). After discussing virtual teams and the way of their communication in their organization, in the next part, we tend to explain regarding significant role of the leadership style which can directly affect the virtual team and team effectiveness performance. As we have already understood, virtual teams have the same vision in the organization, and they are working with each other from the different geographical area. On the other hand, virtual teams are providing the multicultural phenomena for the organizations as well. In addition, the quality of team member’s communication and collaboration has a direct effect on organizational performance and reputation. According to our knowledge, providing good communication skill among virtual team members is related to the role of leadership in the multicultural organization.

2. TEAM EFFECTIVENESS

Leadership influence the level of effectiveness of virtual teams (Huang, Jestice and Kahai, 2010). Scholars and researchers have already found a positive relationship between planning and social leadership skills and team performance, which is a part of the variable team effectiveness (Marta, Leritz and Mumford, 2005; Mumford, et al., 2007). Performance and satisfaction are two commonly used concepts to measure the effectiveness of a virtual team (Lurey & Raisinghani, 2001; Lin, Standing & Liu, 2008). Powel, Piccoli and Ives (2004, p362) define team effectiveness as group-produced outputs and the consequences a group has for its members. The first part of this definition which is said about group produces outputs is related to the performance and the second part which is said about consequences a group is related to job satisfaction. Performance can be described as the extent to which the output of a team meets the standards set by the organization or the team leader (Lurey & Raisinghani, 2001). Satisfaction refers to the perception of decision and agreements with the earlier mentioned output (Chidambaram, 1996). Therefore, the combination of these two concepts together can determine the meaning of team effectiveness.

3. LEADERSHIP STYLE

One of the most effective definitions of leadership was presented by Kim & Maubourgne (1992), which definite that leadership is the skill to encourage confidence and support between the people who are needed to achieve organisational goals. Leadership style is including the leader’s act, attitude and behaviour, which leads to certain regularity and predictability in

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dealing with group members (Dubrin, 2004). the further researching about leadership style is based on the consideration the leadership act, behaviours and attitude. Most classifications of the leadership style are based on the magnitudes of introducing structure and deliberation (Dubrin, 2004). There are several types of leadership style such as autocratic, bureaucratic, laissez-faire, charismatic, democratic, participative, situational, transactional, and transformational leadership (Mosadeghrad 2003b, 2004). Each leadership style applies to a different situation. Therefore, national culture has an important factor in selecting the leadership style in any organization. For example, in virtual teams which can be included from various cultures, transformational leadership can improve the team members' motivation, interactions and trust by identifying and encouraging team members' participation and contribution via communication media such as email and Skype. A team leader of a virtual team can use email or other means to take the expectations and requirements for team members by specifying how their performance will be measured and rewarded (Bass and Avolio, 1990).

In the next section, we would like to explain about two styles of leadership (Transformational and Transactional). In our opinion combination of these two types of leadership can provide a strong outcome for our research.

3.1. Transformational Leadership

One of the significant roles of the transformational leaders is that they provide a clear vision and mission for their employees and their followers in the organization (Bass, Avdio, Jung, and Berson, 2003). On the other hand, transformational leaders by improving the integrity, trust, and emotional interesting among virtual team's members that can directly affect the organizational performance as well. In addition, Transformational leadership communicate with a high level of expectation and they are confident that goals will be achieved by the virtual team's performance. Furthermore, Transformational leaders achieve these results in one or more ways. For example, they may be charismatic to their followers and thus inspire them, or they may meet the emotional needs of each member, and/or they may intellectually stimulate team members. There are four behaviours characteristics of transformational leaders described by Bass, Avdio, Jung, and Berson(2003):

- **Charisma:** Provides vision and a clear mission for a virtual team.
- **Inspiration:** providing a high level of communication, discuss important of purposes in simple ways.
- **Intellectual Stimulation:** Give the chance for a member to take a risk and deciding
- **Individualized Consideration:** Gives personal high level of attention, treats each customer individually, coaches advise them.

According to our knowledge, one of the superior styles of leadership can be related to the transformational leadership style because the leaders can broaden and elevate the interests of their employees especially for the virtual teams when leader generate awareness and acceptance of the purposes and mission of the group.

3.2. Transactional Leadership

The main role of transactional leaders is that leaders work within the cultural organization which following the existing rules, procedures, and norms. The transactional leader could clarify the task structure with the "right way" to do things in a way that maintains dependence on the leader for preferred problem solutions (Bass, Avdio, Jung, and Berson, 2003). Furthermore, the transactional leader could provide and improve a new strategy to structure for their followers or employees to handle a problem within their working in the organization very easily especially for the virtual team's members because they are working in the different

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geographical location map. In addition, the transactional leadership style explains the leadership style in which a leader enables his/her employee to become more efficient by using the following three aspects:

- **Contingent Reward:** provide the rewards for effort, promises rewards for good performance, recognizes accomplishments.
- **Management by Exception (active):** Make a suitable decision before any mistake will happen.
- **Management by Exception (passive):** Decide after failure will happen (Bass and Avolio, 1990).

4. RESEARCH OBJECTIVE

As we have already discussed, virtual teams are geographically dispersed and communicate through electronic means. In addition, the majority of virtual teams' members are including from different cultures which can bring the diversity of value, behaviour, attitudes and knowledge for the organization. In addition, developing trust among team members and maintaining morale were some of the greatest challenges faced in achieving success using virtual teams (Alonso and Wang, 2014). The quality of collaboration directly affects organizational outcomes and performance (Boughzala, and De Vreede, 2015). This makes forming effective teams and maintaining them an important topic for the organization, and the industry in general. Furthermore, current theories on policy highlight need to understand how to build an increasingly cohesive, yet diverse workforce (Reeve, 2014). The degree of accommodation and necessity for the combination of different cultures has been a topic of debate among theorists in this area for several decades (Reeve, 2014). Policies for maintaining cultural accommodations are not only necessary to achieve equality, but they are also necessary to achieve a collective identity that goes beyond culture (Reeve, 2014). Furthermore, the main role and skill of leadership for providing a high level of communication among a diversity of cultures are coming up. Our main purpose and objective of this paper aim to provide investigation effectiveness with the level of the leadership style in the virtual teams, and how they would like to provide trust, integrity and cohesion among the members in the virtual teams and finally improve organizational performance.

5. RELEVANCE

During the last decade, the topic concerning virtual teams has grown very widely. Therefore, we believe that managers cannot ignore and limit the role of leadership in the organization which can directly affect the virtual team performance. On the other hand, the experiences and effective role of the leadership in the virtual team performance still has limitation. Furthermore, more research is required for the better and wider understanding of the context of virtual teams (Zigurs, 2003; Kahai et al., 2007). According to another scholar, most of the research in this field focuses only on one element of complexity and the influence on team effectiveness. For instance, Saunders & Ahuja (2006) focus only on the life cycle of a team and others such as Powell et al., 2006; Kirkman et al., 2004) focus solely on the use of mediated communication. Furthermore, in this research, we decided to determine and investigate the relationship and effectiveness of two leadership styles (transformational and transactional) for the virtual team performances in the educational fields. In our opinion, the combination of virtual teams and leadership styles together would provide deep insight into the audience about this issue. This theoretical relevance can translate into a recommendation about improving the functioning of

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virtual teams in organizations. Finally, in the next part, we are producing our own conceptual model.

6. CONCEPTUAL MODEL

Our conceptual model which we have already provided in below shows the relationship between two leadership style and virtual team effectiveness in the educational field in UAE. Therefore, it is the subject of our research.

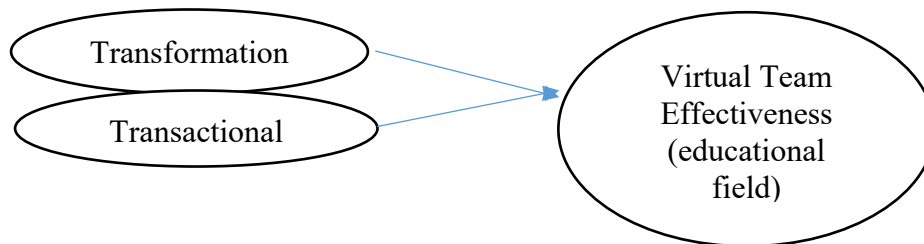


Figure 1: Relationship between two leadership style and virtual team effectiveness

Sources: Our own conceptual model

7. CONCLUSION AND RECOMMENDATION

Nowadays, two phenomena of digitalization and globalization brought us a lot of benefits. For instance, the way of our communication has changed completely. Everybody can communicate with others very easily, regardless of his or her location. On the other hand, multi businesses have already made up globally which is led to producing the multicultural organization as well. In addition, one of the most significant rethinkings about the new strategy in any multicultural organization is determined by leadership skills. Leaders by providing the trust, cohesion and integrity among the members can case to improve the organization collaboration and performance. Several studies have found that leadership can affect team performance, which may take a variety of forms depending on the team's tasks and purposes (e.g., Wageman, 2001). So, in this research, we would like to investigate the two types of leadership skills and behaviours (transformational and transactional) on virtual team effectiveness and performance in the educational fields in the UAE. Six experimental groups will have selected and they will receive the transactional and transformational leadership styles and they will use to the web-sided instruments to do their task for the 5 months' period. According to our knowledge, both types of leadership style must be used for evaluating virtual team performance. By comparing these two types of leadership we believe that transformational leadership style has a more effective role than transactional leadership for a virtual performance. Because transformational leadership try to provide a clear vision and mission for their followers and they are inspiring and stimulating their followers to normal levels of performance in the virtual teams. In addition, transformational leadership by providing a higher level of trust and cohesion among the members can improve the virtual team's collaboration in the organization. On the other hand, we cannot skip the role of the transactional leadership which provide a clear strategy for the members in the virtual teams. In addition, in this research, the differentiation about gender will be considered too. In our opinion, by applying these two types of leadership in the virtual teams both gender can increase their performance. Finally, the limitations of our research can be mentioned because our result is based on finding other researchers only and just apply it in the local area, which limits the generalization of the results. Furthermore, for future researchers, we suggest that further research must apply in the various geography area and focus on the

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measurement of multiple complexity measures in the virtual team at the same time to be able to make a stronger statement.

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**AN APPLICATION OF LATENT TRANSITION ANALYSIS IN
DEFINING SOCIOECONOMIC AND OBESITY STATUS IN ADULTS
LIVING IN TWO CITIES IN CENTRAL REGION OF IRAN**

Rafiee Alhossaini Mahsa

PhD candidate – Visiting Student, Department of Biostatistics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran; Institute of Economic Theory and Methodology, Faculty of Economic, University of Miskolc, Miskolc, Hungary, +36307080708, mhsrafiee@modares.ac.ir

Kazemnejad Anoshirvan

Professor of Biostatistics, Department of Biostatistics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
kazem_an@modares.ac.ir

Sadeghi Masoumeh

Professor and Head of the research center, Cardiac Rehabilitation Research Center, Isfahan Cardiovascular Research Institute, Isfahan University of Medical Sciences, Isfahan, Iran
m_sadeghi@crc.mui.ac.ir

Szilagyi Roland

Associate Professor and Head of Institute, Institute of Economic Theory and Methodology, Faculty of Economic, University of Miskolc, Miskolc, Hungary
roland.szilagyi@uni-miskolc.hu

ABSTRACT

Introduction: Socioeconomic status (SES) is a critical factor for human health but Defining the SES is complex and it is rarely well-defined. In some previous studies Latent class analysis (LCA) was used as a method of characterizing SES. In this study, we employed latent transition analysis (LTA) to better understand how SES is related to obesity in a sample of adults and to assess if it has changes over time. Methods: The current study included 6504 people, aged 35+ living in two cities in the central region of Iran. Seven items as indicators for the socioeconomic variable were evaluated three times over 14 years (2001, 2007, 2013). Also obesity ($BMI \geq 30$) status was considered as another item in the LTA model. Results: The most effective items in LTA classification were education and average of household income. The best model was the model with three statuses (low, middle and high) in all times. People in the middle status of SES were more likely to be obese in comparison with two other statuses (for people in the middle status of SES, the prevalence of obesity was about 84 percent in 2001, 91 percent in 2007 and 90 percent in 2013). Also, almost all people remained in their first identified statuses over time. Conclusion: LTA can contribute to our understanding of socioeconomic drivers of health. LTA can help to summarize socio-economic measures in an index and to assess the changes over time.

Keywords: Socioeconomic status, Obesity, Latent Transition Analysis

1. INTRODUCTION

Socioeconomic status (SES) is a multidimensional concept and it is used to describe a composite measure of a person's income, occupation, employment status, and social status but it is rarely well-defined. A large range of measures of SES was used in different studies. For example, different studies in Japan, Us, Netherlands, UK, Denmark, Australia, Sweden, Korea, Finland, France, Italy, and New Zealand used indicators such as education, occupation, income, medical insurance, material ownership and wealth (Akinyemiju, Ogunsina, Okwali, Sakhuja, & Braithwaite, 2017; Marshall et al., 2015) While the definition indicates the need to include multiple components in its assessment, single measures (such as occupation or educational attainment) were frequently used in previous studies. Using the measurements are often influenced by available data or characteristics of the study but it may also reflect a lack of certainty about how to combine a number of different measurements. In many studies, it is preferred to use an Index for SES instead of using different separate variables (Antony & Rao, 2007; Howard et al., 2016; Marshall et al., 2015). Specifically, in health research instead of sole using of individual-based socioeconomic data, it is preferred to apply a composite index which can be easily use in analysis and inferences (Krieger et al., 2003).

In some studies, different Multivariate Methods were used to define an index for SES. For example, principal component analysis (Fukuda, Nakamura, & Takano, 2007; Krishnan, 2010) or factor analysis (AlOmar, Parslow, & Law, 2018). Also, Latent class analysis (LCA) was used in some previous studies as a method of characterizing SES, particularly when multiple SES indicators are available. For example, in a study on Chinese patients with cancer, Latent Class The analysis was used to define the SES. Four SES indicators (education, income, employment status, and health insurance status) were used to define SES groups (Yuan et al., 2014). Also, in a study in New Zealand, latent class analyses were used to group students by household poverty based on nine indicators of household socioeconomic deprivation (Denny et al., 2016). LCA is a statistical modelling approach to identify a set of discrete, mutually exclusive latent classes of individuals based on their responses to a set of observed categorical variables.

SES is an important factor for human health and It can be considered as the main exposure variable in epidemiological research or as a potential confounder. The social gradient shows a generalized relationship between health and social class, which favors individuals of higher compared with lower SES, both at the extremes and at each level of SES along the gradient, on most indicators of health. The social gradient has likewise been described between family SES and obesity risk for children and adolescents in the general population (Fradkin et al., 2015) Obesity is an important issue in health in both [developed and developing countries](#)(Emamian, Fateh, Hosseinpour, Alami, & Fotouhi, 2017). Obesity negatively affects human health and it is a serious public health problem in many lower- and middle-income countries. Obesity is defined as the condition of excess body fat and is strongly related to lifestyle and associated with age, sex, and SES. It is one of the [non-communicable diseases](#) that have recently been targeted in all countries including Iran(Emamian et al., 2017). Recent studies indicate the relationship between obesity and SES. Obesity affects individuals from all [socioeconomic](#) groups. The association of obesity with socioeconomic indicators varies in developed and developing countries. Also, there are different patterns of obesity between SES and sex groups, especially in developing countries (Emamian et al., 2017).

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A systematic review in Iran indicated that some of the variables that were associated with inequality in obesity include increased age, low [educational levels](#), being married, residence in an urban area, and female sex (Emamian et al., 2017).

To better understand how SES is related to obesity in a group of Iranian adults, in the central region of Iran, and to assess the related changes over time, we employed latent transition analysis (LTA) in this study. LTA is an important longitudinal extension of LCA which allows latent class membership to change over time. LTA can be a good way to model changes over time that is in some sense discrete and to indicate predictors of this change over time. Seven items as indicators for the socioeconomic variable were evaluated three times over 14 years (2001, 2007, 2013).

2. METHOD

The current study included 6504 people, aged 35+ living in two cities in the central region of Iran from a longitudinal population-based study, entitled the Isfahan Cohort Study (ICS). Seven items (education, occupation, an average of household income, ownership status for a house, number of children, number of travel in one year and health insurance) as indicators for the socioeconomic variable were evaluated three times over 14 years (2001, 2007, 2013). Also, obesity status was considered as another item in the model. Obesity was considered as $BMI \geq 30$ According to the World Health Organization definition (Consultation, 2000). Considering the socioeconomic and obesity status as a latent variable, LTA has been applied. Latent transition analysis (LTA), a longitudinal extension of latent class analysis (LCA). LCA is an established statistical method that allows the classification of individuals into groups based on conditional probabilities; within each group, individuals will have a similar pattern of response to categorical variables (Collins & Lanza, 2010; Lanza & Collins, 2008). Latent transition analysis, a longitudinal extension of latent class analysis, is a method that can be used to model development in discrete latent variables, over time. LTA can be an excellent way to model changes over time that is in some sense discrete. In LTA model, change is quantified in a matrix of transition probabilities between two consecutive times (Collins & Lanza, 2010) Model Selection: LTA models with different numbers of latent statuses can be compared using several criteria, including the likelihood-ratio G^2 statistic, Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). It is also important to consider the interpretability of the latent statuses when selecting a model (Collins & Lanza, 2010)

3. RESULTS

Respondents in this study included 6504 people in first, 3356 in second, and 1735 in the third stage, with age 35 years old or older. The average age of participants in this study was 50.23 (± 11.73) years old. Slightly more than half of the respondents (51.3) % were female and 48.7 % were male. The majority of the respondents (90.6%) were married. Most of the people included in the study sample 94 % had 12 years education or less. Also, 22.1% of the people were obese at baseline, 26.3% at the second stage and 30.4% in the third stage.

To analyze the socioeconomic and obesity status, using latent transition analysis we constructed latent statuses of the respondents based on measurements for Seven items (education, occupation, an average of household income, ownership status for a house, number of children, number of travel in one year and health insurance) and evaluated transitions between statuses over time. This modeling approach, using a reliable probabilistic classification mechanism

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constructed real homogenous groups of individuals in each time point and evaluated their transitions across time. We first fitted an LTA model without the group, with different number of statuses (2-4 statuses) to find the appropriate number of statuses to have the best fit and the most interpretability of the results; accordingly, a model with three latent statuses were chosen. Also, the most effective items in LTA classification were education and average of household income.

Table 1. Model selection

Number of classes	AIC	BIC	Log-Likelihood	G-squared
2	7086.58	7364.56	-2548487.37	7004.58
3	5841.77	6302.82	-24837.96	5705.77
4	4186.66	4857.90	-23979.41	3988.66

Table 2(A-C) shows the prevalence of answers to the questions in constructed statuses at each three evaluation times. Each status can be interpreted in terms of the level of education and average of family income. According to the prevalence of responses reported in table 2, over the all study periods, status 2 can be considered as the low SES level for both men and women; because as can be seen this status included a higher prevalence of illiterate and low-income people in comparison with other statuses. While status 1 can be considered as the class of high SES for women and middle SES for men. Also, we can consider status 3 as middle SES for women and high SES for men. An important observation is the maximum prevalence of obesity belong to people in middle SES for both men and women but there was not a remarkable difference between the prevalence of obesity in three socioeconomic statuses for men.

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Table 2.A Item-response Probabilities (Probability of Item Response Given Latent Status) and Prevalence of latent Statuses in time 1

<i>Item-Response Probabilities</i>		Socioeconomic and Obesity Status			
		Time 1			
		Group	Status1	Status2	Status3
Average of family income	Low	Women	0.7943	0.9671	0.7937
		Men	0.8914	0.9639	0.5754
	Middle	Women	0.2011	0.0286	0.1986
		Men	0.1029	0.0331	0.4001
	High	Women	0.0046	0.0043	0.0077
		Men	0.0057	0.0029	0.0245
Education level	Illiterate	Women	0.0016	0.8501	0.0521
		Men	0.1208	0.8657	0.0038
	Elementary School	Women	0.5294	0.1499	0.6203
		Men	0.7733	0.1301	0.0125
	Middle School or High School	Women	0.4065	0.0000	0.2891
		Men	0.1059	0.0000	0.6924
	Higher than High School	Women	0.0626	0.0000	0.0385
		Men	0.0000	0.0043	0.2913
Obese	No	Women	0.9081	0.7482	0.0014
		Men	0.8596	0.8954	0.8722
	Yes	Women	0.0919	0.2518	0.9986
		Men	0.1404	0.1046	0.1278
<i>Prevalence of latent Statuses</i>		Women	0.3091	0.5465	0.1444
		Men	0.3948	0.2786	0.3265

In the lower part of table 2(A-C), the prevalence of latent status membership is shown. It can be observed that the prevalence of being in status 1 across all times were more than other statuses for men, while women had more prevalence of being in status 2 in comparison with other statuses (time 1: 0.5465, time2: 0.5440, time3: 0.5381); that means most of the women in this study were in the low level of SES and most of the men were in middle status.

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Table 2.B Item-response Probabilities (Probability of Item Response Given Latent Status) and Prevalence of latent Statuses in time 2

<i>Item-Response Probabilities</i>		Socioeconomic and Obesity Status				
		Time 2				
		Group	Status1	Status2	Status3	
Average of family income	Low	Women	0.0483	0.3418	0.0883	
		Men	0.0528	0.3103	0.0060	
	Middle	Women	0.5113	0.5500	0.5246	
		Men	0.5844	0.5700	0.2812	
	High	Women	0.4404	0.1082	0.3872	
		Men	0.3628	0.1196	0.7128	
Education level	Illiterate	Women	0.0229	0.8768	0.0650	
		Men	0.0962	0.8912	0.0087	
	Elementary School	Women	0.5124	0.1232	0.5622	
		Men	0.7823	0.1036	0.0183	
	Middle School or High School	Women	0.3968	0.0000	0.3386	
		Men	0.1169	0.0046	0.6328	
	Higher than High School	Women	0.0679	0.0000	0.0342	
		Men	0.0046	0.0006	0.3401	
	Obese	No	Women	0.9282	0.6722	0.0750
			Men	0.8162	0.8611	0.8885
Yes		Women	0.0718	0.3278	0.9250	
		Men	0.1838	0.1389	0.1115	
<i>Prevalence of latent Statuses</i>		Women	0.2745	0.5440	0.1815	
		Men	0.3922	0.2819	0.3258	

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Table 2.C Item-response Probabilities (Probability of Item Response Given Latent Status) and Prevalence of latent Statuses in time 3

<i>Item-Response Probabilities</i>		Socioeconomic and Obesity Status			
		Time 3			
		Group	Status1	Status2	Status3
Average of family income	Low	Women	0.1551	0.5297	0.2128
		Men	0.1682	0.4501	0.0460
	Middle	Women	0.4471	0.4252	0.5014
		Men	0.5553	0.4491	0.3084
	High	Women	0.3978	0.0451	0.2858
		Men	0.2765	0.1008	0.6456
Education level	Illiterate	Women	0.0163	0.8188	0.0715
		Men	0.0366	0.9021	0.0000
	Elementary School	Women	0.4904	0.1812	0.5241
		Men	0.8083	0.0963	0.0032
	Middle School or High School	Women	0.3908	0.0000	0.3490
		Men	0.1529	0.0016	0.6435
	Higher than High School	Women	0.1025	0.0000	0.0555
		Men	0.0023	0.0000	0.3532
Obese	No	Women	0.8809	0.6454	0.0704
		Men	0.7968	0.8347	0.8380
	Yes	Women	0.1191	0.3546	0.9296
		Men	0.2032	0.1653	0.1620
<i>Prevalence of latent Statuses</i>		Women	0.2768	0.5381	0.1851
		Men	0.3866	0.2819	0.3314

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Table 3 shows the transition probabilities across the study periods. According to the transition probability matrix, almost all individuals remained in their first identified statuses over time. There was only a low probability for women in high SES at time 1 to have a transition to medium SES at time 2 (transition probability = 0.12). Other transition probabilities were near 0.

Table 3. Transition Probabilities in Latent Status Membership

<i>Transition Probabilities for Group 1: Women</i>									
Probability of transitioning tolatent status in time 2			Probability of transitioning toLatent status in time 3		
Conditional on time 1 latent status		Status 1	Status 2	Status 3	Conditional on time 2 latent status		Status 1	Status 2	Status 3
	Status 1	0.8748	0.0053	0.1199		Status 1	0.9893	0.0107	0.0000
	Status 2	0.0076	0.9924	0.0000		Status 2	0.0096	0.9804	0.0100
	Status 3	0.0000	0.0000	1.0000		Status 3	0.0000	0.0100	0.9900
<i>Transition Probabilities for Group 2: Men</i>									
Conditional on time 1 latent status		Status 1	Status 2	Status 3	Conditional on time 2 latent status		Status 1	Status 2	Status 3
	Status 1	0.9934	0.0066	0.0000		Status 1	0.9857	0.0000	0.0143
	Status 2	0.0000	1.0000	0.0000		Status 2	0.0000	1.0000	0.0000
	Status 3	0.0000	0.0022	0.9978		Status 3	0.0000	0.0000	1.0000

4. DISCUSSION

In this study we assessed the level of socioeconomic status and its transitions overtime and evaluate its relation with obesity in a general population of two cities in the central part of Iran, using the advanced statistical analysis method i.e. LTA. We observed the maximum prevalence of obesity belong to people in the middle SES for both men and women. Also, there was not a remarkable difference between the prevalence of obesity in three socioeconomic statuses for men; so, it may show that there is no remarkable relation between SES and obesity in men. Additionally, it was observed that most of the women in this study were in the low level of SES and most of the men were in middle status. Finally, it was observed that almost all individuals remained in their first identified statuses over 14 years (2001-2013). In previous studies, the importance of “social research” in explaining the global rise in obesity prevalence was highlighted. In some studies, compelling evidence was provided that the burden of obesity in higher-income countries was disproportionately placed on the poor, particularly for women, While, obesity was a problem associated with affluence for both men and women in lower-income countries. However, other studies suggested that the burden of obesity was shifting toward lower SES strata. This inverse SES-obesity relationship has been observed in a variety of lower- and middle-income countries (Dahly, Gordon-Larsen, Popkin, Kaufman, & Adair, 2009). We should notice that interpretation of the relationship between SES and obesity in a particular context may be influenced by the SES indicator investigated (Dahly et al., 2009)

Conclusion: Applying LTA in defining socioeconomic status and assessing the changes over time, can help to summarize socio-economic measures in an index and improving the interpretations. Also, LTA can contribute to our understanding of socioeconomic drivers of health.

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WHAT DRIVES E-DOCUMENT MANAGEMENT TOOLS? AN EMPIRICAL EVALUATION OF THE REVISED UNITED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY

Aigul, Meirmanova

PhD student of the Doctoral School of Enterprise Theory and Practice,
University of Miskolc, Hungary
aygulmeyr@mail.ru

ABSTRACT

Many people look for E-document management tools and all kinds of applications to improve their routines. This happens because these types of resources help to organize what we need to do daily, as well as allowing us to have a better vision of everything we still have to do. For those who work on the internet, this type of tool is very important, since it is easy to get disorganized due to the possibilities of online distraction. And for those who work alone, that is even worse, since there are several different tasks that need to be completed with short deadlines or even the same day.

The usage of E-document management tools in agriculture is a “tool” with enormous utility, since it can facilitate and optimize farmers’ routine. But what elements of the E-document management tools really matter and how do these in turn influence E-document management usage behaviour? Adopting the Unified Theory of Acceptance and Use of Technology (UTAUT) as the theoretical foundation, the model was empirically analysed using data from a survey of E-document management tools’ users. The structural equation modeling technique was used to evaluate the causal model and confirmatory factor analysis was performed to examine the reliability and validity of the measurement model. Implications and Recommendations will be provided after thorough displaying the general, technical content and an appearance dimensions of the E-document management tools.

Keywords: *E-document management tools’ dimensions, usage behaviour, technology acceptance model*

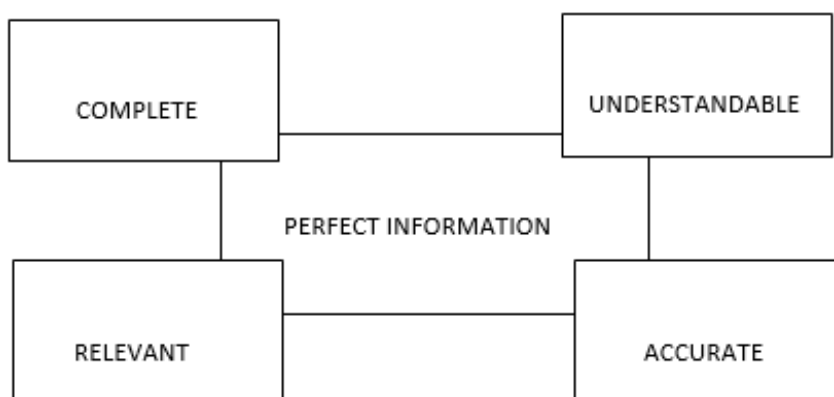
1. INTRODUCTION

The rapid development of the Internet has led to the formation of network communities that have a significant impact on the economic sphere of society. The Internet is becoming not only a place for making transactions on the sale of both electronic content and material benefits, but also a platform for searching for information and a medium of communication.

After the Neolithic Revolution and the Industrial Revolution, we may now actually be living through the third major economic revolution of humankind: the Information Revolution (Bruncko, 2015). The tools, such as the plough, was the new technology of the Agricultural Revolution, while the Industrial Revolution was primarily driven by machines powered by external sources of energy, such as the steam engine. These machines made individual producers vastly more effective. Nowadays the perfect information is the main component of the Information Revolution. For example, if we want to travel to a foreign country, thanks to services like Airbnb, Booking.com we can now easily to find an empty local accommodation on our dates of travel. If we are in a big city, using services like Google Maps on smartphone

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we can now know with perfect precision the best way to get from point A to point B at any given moment and how long it will take us. As we see perfect, accurate information plays a crucial role everywhere and it's description is shown below (see Figure 1).



1. figure: Diagram of the perfect information

Source: <https://depositphotos.com/107354924/stock-photo-diagram-of-perfect-information.html>, 2016, modified by author

Complete, understandable, relevant, accurate perfect agricultural information also is the basic necessity for the farmers. Information and solutions delivered to rural farmers through information and communication technologies will help raise the standard of living in the countryside, create new workplaces, increase knowledge and create favorable conditions for the general development of the rural economy. There are more benefits linked to economic aspects in increased earnings and production through ICT use (Soriano, 2007).

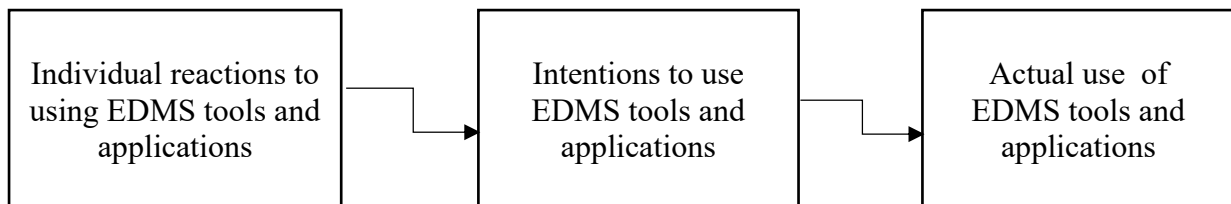
If we consider that the information, both internal and external, it is a key and strategic element within organizations and an element of competitiveness, the various ways in which electronic documents are produced, the variety of types of them, and the adequacy of current computer systems for the Comprehensive management of circulating documentation are the essential elements that must be carefully analyzed by the information and documentation services of any institution that produces and manages this type of documents during designing and conceptualizing an electronic management system for the information. The proliferation of electronic documents has allowed this conceptualization to take on a special importance nowadays. An electronic document management system (EDMS) is a system (computer program, software, etc.) that allows to organize and automate work with electronic documents (i.e. electronic document management) throughout their entire life cycle. The main functionality of the EDMS should include the ability to create, modify, store and route documents, as well as a number of service capabilities, such as search, classification, etc. EDMS, in addition, is designed to organize and automate the processes of interaction between employees (transferring documents, issuing tasks, sending notifications, etc.). Employees can quickly receive any necessary information on the company's customers. At the same time, documents can be either structured objects of an information system that have a certain set of standard details or unstructured ones (Word, Excel, .pdf, .jpg files, etc.). EDMS can include an electronic archive of documents, which makes it possible to collectively process information, and a system for automating business processes (workflow). Traditionally, the concept of workflow automation is associated with work with correspondence, administrative and organizational documents, etc. However, the EDMS also allows to associate each document with the actions that should be taken with it. Thanks to such a system, it becomes possible to track the performance of certain work by employees. Thus, EDMS provides not only effective management of document flows

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and information security in the company, but also increased control over the execution of documents and the productivity of employees.

2. CONCEPTUAL FRAMEWORK AND METHODOLOGY

Author decided to measure the intention of farmers in usage of the e-document management technologies and applications. In terms of behaviour measuring, technology acceptance can be measured by usage behaviour as well as by behaviour intention (Szajna, 1996). Intention and/or usage were the key dependent variables in acceptance of technology in most of studies. Especially, in cross-sectional study, a number of researchers measured only intention as the key dependent variable, some of the researchers measured only usage as the key dependent variable. Obviously, the models of technology acceptance which were developed and surveyed could be concentrate either on behaviour intention or usage behaviour or both behaviour intention and usage behaviour depended on the time horizon of their study. Venkatesh *et al.* (2003) suggests that individual reactions to use the EDMS technologies, applications may influence intentions to use EDMS technologies and applications and intention of the EDMS technologies, applications may influence actual use EDMS technologies and applications (see Figure 2).



2. figure: Basic Concept of the Research Model
Source: Adapted from Venkatesh et al. (2003)

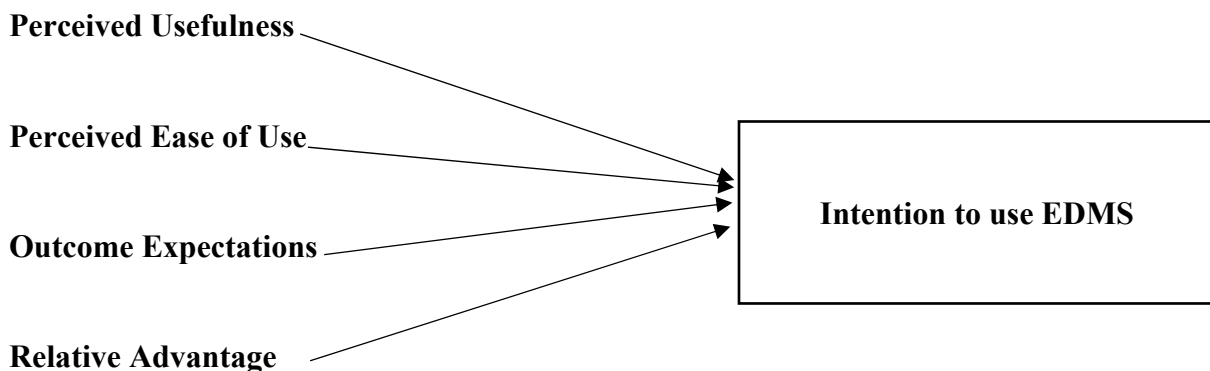
The theoretical framework comprises important types of variables (see Figure 3).

Five core constructs (independent variables) are perceived usefulness (PU), perceived ease of use (PEOU), outcome expectations (OE) and relative advantage (RA). These are core constructs are expected to influence usage intention in farming (INTENTION TO USE EDMS).

The objectives of this study is to examine are:

- 1) Can UTAUT model predict farmer's intention to use EDMS tools in Kazakhstan?
- 2) What are the factors influencing intention to use EDMS tools in Kazakhstan?

In order to achieve that, author modified the original UTAUT model incorporating constructs such as perceived usefulness, perceived ease of use, outcome expectations, relative advantage.



3. figure: Basic Concept of the Research Model
Source: Adapted from Venkatesh et al. (2003)

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There is a description of the factors associated with the adoption of information technology acceptance especially EDMS based as identified in the introduction part.

2.1 Perceived Usefulness (PU) and Perceived Ease of Use (PEOU)

Perceived Usefulness is a degree to which users are sure that the use of this technology has improved his/her labor productivity and Perceived Ease of Use is a degree of user's confidence is that mastering the use of technology will not cost him much effort. These two factors are the most important constructs for technology use (Davis, 1989).

In most cross-sectional studies perceived usefulness and perceived ease of use are the direct determinants of usage behaviour. Perceived usefulness (PU) is defined and used in this study as:

“The degree to which a person believes that using a particular system would enhance his or her job performance” (Davis 1989, p. 453).

Perceived ease of use (PEOU) is defined and used in this research as:

“The degree to which a person believes that using a particular system would be free of effort” (Davis 1989, p. 320).

Agarwal and Karahanna (2000) found that perceived ease of use and perceived usefulness accounted for 88 percent of the variance in behavioral intention. In most of researches the influence of perceived ease of use and perceived usefulness in determine adoption of technology are considered (Anakwe, Anandarajan, & Igbaria, 1999; Majchrzak, Rice, Malhotra, King, & Ba, 2000; Mbarika, Byrd, McMullen, & Musa, 2002).

2.2 Perceived Risk (PR)

The facilitating conditions determinant is defined and used in this research as:

“The degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system” (Venkatesh et al. 2003, p. 453).

In attempting to investigate the determinants for the adoption of mobile phones in rural India, Jain and Hundal (2007) argue that the choice of a provider is moderated by facilitating factors such as network coverage, service quality, easy availability of subscription and bill payment centers. Several other variables relevant to the adoption of mobile phone technology that fall under the broad category of “facilitating conditions” can be found in the literature.

2.3 Outcome expectations (OE)

Developed by Fishbein and Ajzen (1975), the Theory of Reasoned Action (TRA) suggests that behavior intention depends on the person's attitude toward the behavioral and the subjective norm ($B=A+SN$). In other words, a person's voluntary behavior is predicted by his attitude toward that behavior and how he/she thinks people would view him/her if he/she performed the behavior. Kargin, Basoglu, and Daim (2009) also note that social influence is more important in determining adoption of EDMS services than the user's characteristics.

2.4 Relative Advantage (RA)

The facilitating conditions determinant is defined and used in this research as:

“Tangibility of the results of using the innovation” (Venkatesh and Davis, 2000).

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The degree to which the results or benefits of using the innovation are apparent i.e. how tangible or apparent these benefits are to the adopter. The technology should visibly improve the quality or effectiveness of the adopters' work or processes e.g. the decision making process or the job output quality.

2.5 Behaviour intention

Heedong and Yongjin (2004) developed a conceptual model of both the affective and cognitive dimensions of attitude toward information systems usage. Their model was based on the original TAM model (Davis *et al.*, 1989), with the addition of behavioral intention back as a mediator between attitude and usage. The TAM model claims that intention is an exact proxy to examine and predict a user's behaviour toward a particular technology or system.

Results from much research have shown consistent results showing a significant correlation between behaviour intention (BI) and usage behaviour. Moreover, the path from behavioural intention to behaviour is significant in the TAM (Technology Acceptance Model), TPB (Theory of Planned Behaviour), and DTPB (Decomposed Theory of Planned Behaviour model) models.

3. ANALYSIS AND CONCLUSION

Due to the nature of the study was applied primary data collection approach. Questionnaires were consisted of 12 questions on 4 factors associated with UTAUT model. The questions were on a five-point Likert scale format ranging from strongly disagree to strongly agree. The study population is based in Kazakhstan. The author used 147 responses for analysis out of 208 questionnaires. The data have been entered and coded in SPSS accordingly so that proper statistical analysis can be conducted to answer the research questions. Author used SPSS AMOS for conducting Confirmatory Factor Analysis.

The reliability analysis was applied to assess the internal consistency of the items for each latent factors of UTAUT model. Analysis shows that all the constructs satisfactorily met the requirement for reliability with $\alpha > 0.7$ (see Table 1).

1. table: Reliability statistics

Factors	Cronbach's alpha	N of items
Perceived usefulness	0.891	3
Perceived ease of use	0.915	3
Outcome expectations	0.728	3
Relative advantage	0.749	3

Source: own analysis

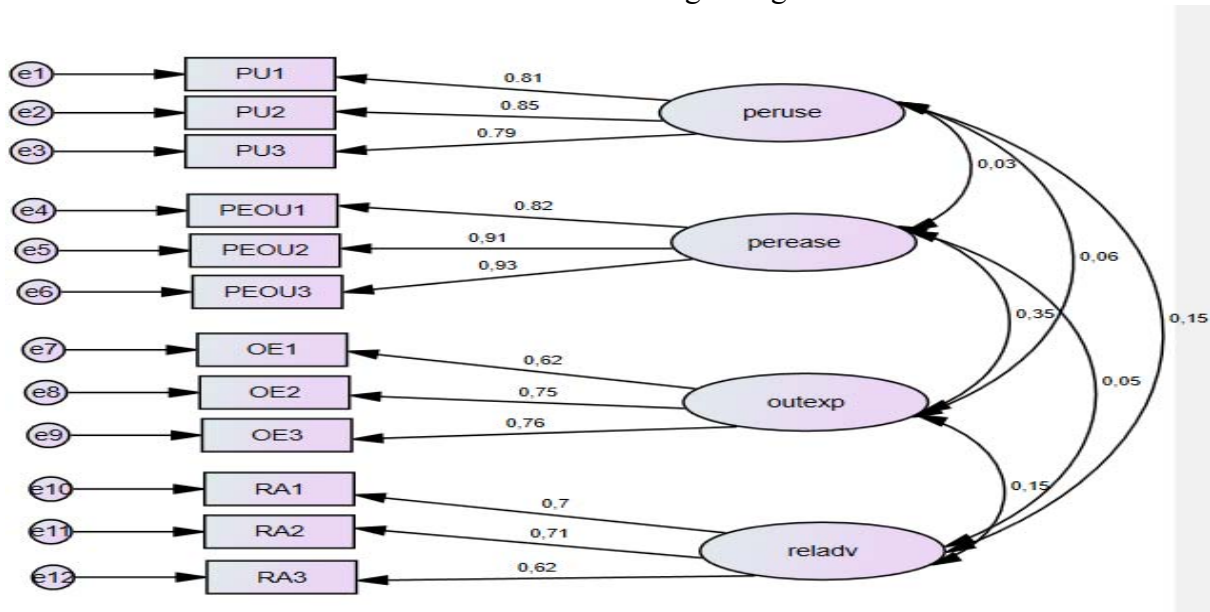
A confirmatory factor analysis has been conducted to illustrate how the 12 questionnaire items explain the 4 UTAUT factors. The CFA model seeks to explain the how well these latent factors are defined by the questionnaire items developed to understand participants opinion regarding the UTAUT factors.

The model fit statistics indicated a good fit: CMIN = 139.19 with df = 76 and CMIN/df ratio = 1.83, which is < 2 , indicating an acceptable fit (Byrne, 2001); standardized RMR = .045 and GFI = .91; NFI = .96 and CFI = .972 all indicating a good fit (Byrne, 2001); and RMSEA =

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0.068 and a PCLOSE = 0.041, which is non-significant, thus indicating 90% confidence that the RMSEA value falls within these two interval values (Byrne, 2001).

Figure 4 shows the loading strength by each item onto the respective latent factors. The loading matrix illustrates that all of the items achieved loading strength >0.4.



4. figure: CFA model
Source: Own analysis

UTAUT path model developed from the analysis of data. The model illustrates how the four basic factors of a Unified theory of acceptance and use of technology (UTAUT) model illustrate participant's intention to use EDMS technologies and applications.

Based on these findings, we can offer a number of recommendations on the development of tools to ensure the required activity of employees in the adoption and use of information technologies (in particular, EDMS technologies and applications) in farms of Kazakhstan. Also it is compulsory to maintain a relationship between the personal effectiveness of employees and the results of the organization as well as the development of a positive social climate in the organization with respect to the use of corporate EDMS technologies and applications.

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HOW TO USE SMART CITY MODELS? A NEW APPROACH

Attila, Morva

PhD student, University of Miskolc, Faculty of Economics, Institute of Marketing and Tourism
attila.morva@uni-miskolc.hu

SUMMARY

In the 21st century due to the increasing urban population and shrinking resources the effective and sustainable operation of the cities is becoming more and more important. A possible solution is to become a “smart city” so the different measuring, ranking and evaluating models can play a key role during this process. In the last years many different models have been developed but these models usually contain a lot of soft indicators and their use is costly and time-consuming, furthermore the application of these models requires complex methodological knowledge. In my research I have developed a new smart city measuring-ranking model what works with only a few hard indicators therefore it can be applied easily and it can operate as a time and cost effective tool in the fields of city development and social marketing strategies. On the basis of the developed “KPI model” I evaluated and ranked 18 different European cities in five dimensions (communities, governance, technology, environment and potential). During the evaluation of the results I concluded that the smart city measuring, ranking and evaluating models as tools of social marketing campaigns can effectively contribute to increasing social welfare and reducing social costs.

1. INTRODUCTION

The concept of smart city is becoming more and more common nowadays, and it is often associated with measures to improve transport, reduce air pollution and apply modern technologies in urban development. But the concept of smart city is used in various meanings and contexts in the literature. According to one of the most cited definition by Rudolf Giffinger: “... a Smart City is a well performing city... built on the ‘smart’ combination of endowments and activities of self-decisive, independent and aware citizens” (Giffinger, Pichler-Milanovic 2007, pp. 10.). However, neither this, nor the many other known approaches, can be considered as a commonly accepted definition of the concept, since most experts agree that the individual definitions usually serve the purpose of a given research rather than a timeless definition.

Based on the best known definitions, many smart city measurement and evaluation models have been developed over the past decade to help evaluate cities' performance. These models typically use a complex set of indicators to measure urban performance. Despite the different methods and indicators used by each model, it is common to all models to assess the performance of cities by different dimensions. The previously defined models (e.g. Giffinger model, KRAFT potential), although differing in their approach, are typically constructed using a large amount of statistical data as well as using different subjective elements i.e. soft indicators. However, some experts have criticized that (i) the availability of some data used in the models is limited or (ii) they are based on sampling (Kitchin, 2014), (iii) they are usually time and space-specific, (iv) costly to produce, and (v) time-consuming (Miller, 2010) and finally (vi) their application requires complex methodological knowledge that is typically not available within institutional framework.

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In order to solve the problems listed above, I have developed a new smart city measuring and evaluating model that goes beyond the above limitations of the practical application of smart city models, relying only on a small number of easily available hard indicators thus it can be used easily and it can function as a time and cost effective tool in the urban development strategies and in the evaluation of the achieved results. In addition to presenting the new model, in my research I am looking for an answer what possibilities can be found in the application of the smart city models especially in the field of social marketing.

2. KPI BASED MODEL

In the KPI (Key Performance Indicators) based model I aimed to develop a holistic indicator system whose key features are: (i) It shows the results achieved by cities not only concentrated in a single indicator, but it provides a possibility to evaluate each subsystem separately, (ii) KPI-based, that is, each subsystem is described by only one or a few well-chosen indicators, (iii) it omits soft indicators to exclude the inclusion of subjective factors in to the model, (iv) it focuses on sustainable development, thus giving priority to the preservation of the natural environment in its indicator system, while continuously improving the quality of life (v) it allows to determine the current status characteristics of the selected territorial unit, (vi) it allows to measure the deviation from a set goal, (vii) it is suitable for comparison both by time and by region, that is, the statistical indicators used are available over time and at regional level too, (viii) its application is quick and easy, does not require any special professional knowledge and does not require significant financial expenses, and finally (ix) the data on which the model is based are public or easily accessible.

In addition to the above, clarifying the concept of smart city is essential before developing a model. In my interpretation, *“the smart city is a city based on smart solutions whose communities and governments are actively committed to sustainable development in order to ensure a high quality of life for themselves and for future generations”* (Morva, 2019, pp. 17.). The relationship between the former definition and the indicators to be selected is ensured by a possible set of indicators: (i) the International Organization for Standardization (ISO) has defined in its ISO 37120:2014 Standard Book on Sustainable Development of Communities a total of 100 indicators that can be used to measure the performance of cities and have a significant impact on the quality of life in cities. (ii) The United Nation's 193 member states unanimously adopted the new integrated development framework in 2015 (United Nations Statistical Commission, 2017). Within this framework, 17 Sustainable Development Goals (SDGs) and 169 sub-targets have been identified for which a total of 230 indicators have been defined to measure the progress.

Most of the indicators of the KPI model were pre-selected out of the 330 listed, and finally a total of 19 indicators were used to describe the five pre-defined dimensions of communities, governance, technology, environment, and potential. The complexity of the dimensions justified to divide the five dimensions into 13 subsystems. Most part of the indicators (53%) used in the model are local and regional (NUTS 3), 32% are regional (NUTS 2) and the remaining 15% are national. The structure of the model is illustrated in Figure 1.

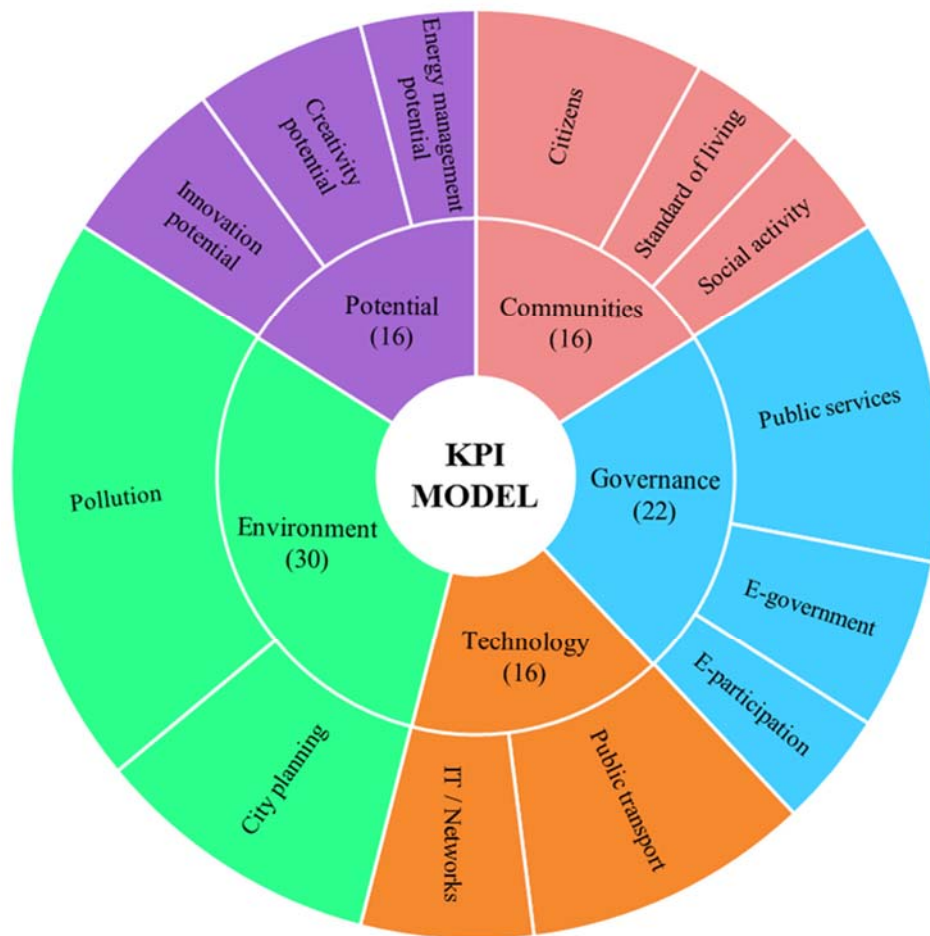


Figure 1: Structure of the KPI model
Source: own research

3. METHODOLOGY

The methodology used in the KPI model differs from that used in all the smart city models I examined. An innovation of this model is that, unlike the models examined, it does not assess cities only on the basis of a single aggregate performance indicator, but also uses a two-dimensional evaluation to consider the balanced performance behind the aggregate indicator. This is extremely important because it draws the attention of the evaluator to the possible inequalities of development areas in addition to defining urban performance.

In the KPI model, I used a modified form of the Bennett method to aggregate the indicators and determine the performance indicator for cities. I applied the Bennett method in my model by assigning a benchmark value to each indicator and comparing the data observed regionally to the pre-selected benchmarks. These proportions show how the territorial unit under examination performs against the benchmark. Thus, typically, variable scores can be generated for each indicator in the interval [0; 1]. In extreme cases, the value of the observed indicator may exceed the benchmark, in which case the value of the indicator is fixed at 1. For those indicators where the increase in the distance from the specified worst value represents an improvement in performance, I have transformed the value of the indicator into the [0; 1] interval using a scale transformation.

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The aggregate performance indicator was denoted by SCI and interpreted in a ratio form:

$$SCI = \sum_{i=1}^k w_i \cdot \frac{m_i}{m_{Bi}}$$

where w_i – the weight of indicator i ;
 m_i – the value of indicator i ;
 m_{Bi} – the value of benchmark i ;
 k – the number of indicators.

As a second evaluation dimension I marked the indicator quantifying the disparities between development areas with KI and interpreted it as a ratio:

$$KI = \frac{\sqrt{\sum_{i=1}^n w_i \cdot (D_i - SCI)^2}}{SCI}$$

where w_i – the weight of dimension i ;
 D_i – the performance of dimension i ;
 n – the number of dimensions.

Applying these two aspects together, I developed the SCI-matrix, which marks the SCI value on the x-axis and the KI value on the y-axis to visualize the results achieved by the cities. The SCI matrix can be divided into several parts, both horizontally and vertically, and the areas thus identified can be assigned their own strategies, which can contribute to the development of a smart city career. These separated areas thus formed have no fixed boundaries, so that the matrix distribution can be dynamically adapted to the evaluator's goals. The SCI matrix may be divided into parts after the cities have been evaluated, taking into account their results and the used benchmarks.

4. TESTING THE KPI MODEL

The methodology for selecting cities is strongly influenced by the approach of known Helix models (e.g. Quintuple-Helix). As with the core of Helix models, integrated smart collaboration between universities, governments, industry, society, and the natural environment can create a local force that can respond to the challenges of urbanization.

Based on the above, I considered it appropriate not to treat cities as independent entities – strictly within the administrative boundaries of the city – but to consider them regionally, along with their commuting zone. For demarcation, I used the definition of Functional Urban Areas (FUA) defined by the OECD and the European Commission, which typically consists of a densely populated urban center and an associated commuting zone (OECD, 2019). Population data for these functional urban areas are contained in the Global Human Settlement Layer (GHS) database. Based on this database, the OECD has defined four categories according to the population of functional urban areas (Table 1).

Table 1: The Functional Urban Area categories

#	CATEGORIES	POPULATION (CAPITA)
1.	Small Functional Urban Area	50000 – 100000
2.	Medium-sized Functional Urban Area	100000 – 250000
3.	Metropolitan Functional Urban Area	250000 – 1500000
4.	Large Metropolitan Functional Urban Area	1500000 –

Source: OECD, 2019

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Small FUA cities were excluded from the study, as these settlements are typically non-university cities and therefore cannot fulfill the function of a knowledge center in their region. A further consideration in selecting the cities included in the study was to create the possibility for comparisons within the country and to include as many European countries as possible in the survey. I chose Hungary for comparisons within the country, so four cities were selected from our country. The criteria for selecting cities are shown in Table 2:

Table 2: Criteria for selecting cities

#	SELECTION CRITERIA	IDENTIFYING ATTRIBUTE
1.	Population	Medium-sized, Metropolitan and Large Metropolitan (FUA)
2.	Knowledge center	Cities with at least one university
3.	Comparability within a country	The sample should include multiple cities from at least one country

Source: own research

A total of 18 European cities have been selected based on the above considerations. Of the selected cities, four are Medium-Sized FUA, 12 are Metropolitan, and two are Large Metropolitan. These ratios correspond to the distribution of cities in the Metropolitan - Large Metropolitan categories registered in the Global Human Settlement Layer (GHS) database. The total number of Medium-Sized FUAs cannot be extracted from the database, therefore the data for these cities can only be examined individually. In the case of the Hungarian cities involved in the study, an important selection criteria was that all three categories should be represented in the sample. The location of the selected cities is shown in Figure 2:

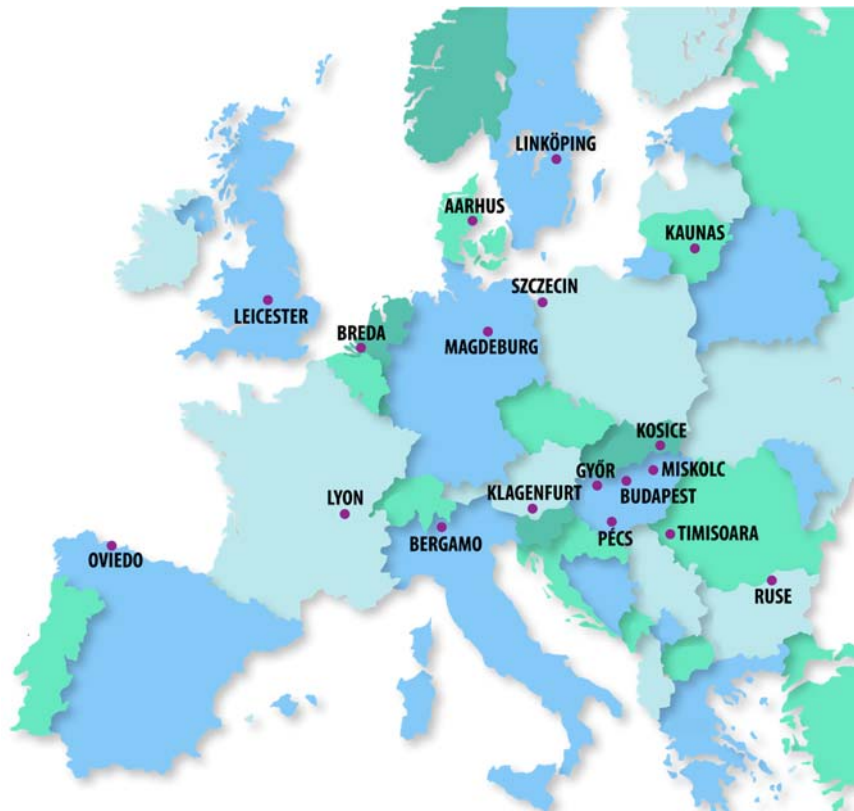


Figure 2: The location of the selected cities

Source: own research

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After having selected the cities, I determined the results by dimensions and the aggregated results based on the data collected for each indicator, and then I ranked the cities. Table 3 shows the ranking of the cities by dimension and their aggregated results.

Table 3: City rankings and scores for each dimension in the KPI model

CITY / COUNTRY	COMMUNITIES	GOVERNMENT	TECHNOLOGY	ENVIRONMENT	POTENTIAL	SCI RANK	KI RANK
LINKÖPING (SE)	2. (0,8399)	3. (0,7646)	1. (0,9839)	8. (0,4272)	1. (0,7101)	1. (0,7018)	5. (0,2824)
AARHUS (DK)	3. (0,7513)	1. (0,8366)	8. (0,3675)	2. (0,6371)	2. (0,6583)	2. (0,6595)	1. (0,2251)
BREDA (NL)	1. (0,8607)	2. (0,7786)	2. (0,6720)	5. (0,5008)	6. (0,3313)	3. (0,6198)	7. (0,2924)
LEICESTER (UK)	4. (0,7153)	8. (0,6398)	10. (0,3387)	1. (0,6774)	7. (0,2702)	4. (0,5559)	9. (0,3150)
LYON (FR)	5. (0,7034)	4. (0,7428)	12. (0,3006)	11. (0,3735)	3. (0,4620)	5. (0,5100)	11. (0,3446)
KAUNAS (LT)	13. (0,4568)	7. (0,6447)	5. (0,4651)	3. (0,6138)	9. (0,2284)	6. (0,5100)	4. (0,2820)
KLAGENFURT (AT)	6. (0,6990)	6. (0,6696)	13. (0,2979)	9. (0,4203)	4. (0,4502)	7. (0,5049)	6. (0,2902)
BERGAMO (IT)	7. (0,6451)	13. (0,5262)	3. (0,6297)	16. (0,3415)	5. (0,3378)	8. (0,4762)	3. (0,2769)
MAGDEBURG (DE)	10. (0,5435)	9. (0,6098)	11. (0,3185)	6. (0,4550)	8. (0,2699)	9. (0,4518)	2. (0,2709)
OVIEDO (ES)	9. (0,6010)	5. (0,7156)	9. (0,3493)	13. (0,3587)	11. (0,1798)	10. (0,4459)	14. (0,4193)
BUDAPEST (HU1)	14. (0,4560)	10. (0,5927)	7. (0,3707)	7. (0,4331)	10. (0,1806)	11. (0,4215)	8. (0,3036)
SZCZECIN (PL)	8. (0,6042)	12. (0,5335)	14. (0,2711)	4. (0,5129)	15. (0,0576)	12. (0,4205)	16. (0,4476)
KOSICE (SK)	11. (0,5347)	18. (0,3954)	6. (0,4533)	14. (0,3516)	14. (0,1069)	13. (0,3677)	12. (0,3521)
MISKOLC (HU3)	17. (0,4178)	17. (0,4333)	4. (0,5227)	18. (0,3144)	18. (0,0380)	14. (0,3462)	15. (0,4378)
GYŐR (HU2)	12. (0,4574)	15. (0,4422)	16. (0,2419)	10. (0,4139)	16. (0,0566)	15. (0,3424)	13. (0,4184)
RUSE (BG)	18. (0,3662)	11. (0,5770)	18. (0,1331)	12. (0,3640)	12. (0,1618)	16. (0,3419)	17. (0,4584)
TIMISOARA (RO)	15. (0,4297)	16. (0,4410)	15. (0,2540)	17. (0,3299)	13. (0,1443)	17. (0,3285)	10. (0,3155)
PÉCS (HU4)	16. (0,4248)	14. (0,5134)	17. (0,2339)	15. (0,3437)	17. (0,0425)	18. (0,3282)	18. (0,4679)

Source: own research

Cities can be divided into four distinct groups based on their results (Figure 3). Northern European cities are performing well, followed by Western European cities and the Baltic states, represented by Kaunas. Between these two groups can be found Breda, which according to SCI and KI scores cannot be classified clearly in any of the previous groups. The group of Oviedo, Szczecin and Budapest is slightly lagging behind the second group, they have significantly higher KI and lower SCI scores. The poorest performers were the cities developing behind the former "Iron Curtain".

Based on the SCI score, the Swedish city of Linköping achieved the best result and it was the only one to achieve the criteria of the Smart City cluster I set up, it performed above the average in all dimensions of the KPI model. Although the City of Aarhus did not reach the Smart City category, it should be noted that it was the most balanced of the cities surveyed and, similarly to the Giffinger model, finished second in this study. The performance of Breda is also outstanding, which also achieved above-average performance in all dimensions, although its lagging behind the northern cities is still noticeable.

Of the second group I have defined, I highlight the results of Kaunas and Magdeburg. Although they were once the cities of the "Eastern Bloc", since the dissolution of the Soviet Union they have described a completely different development path than the other Eastern European cities I examined.

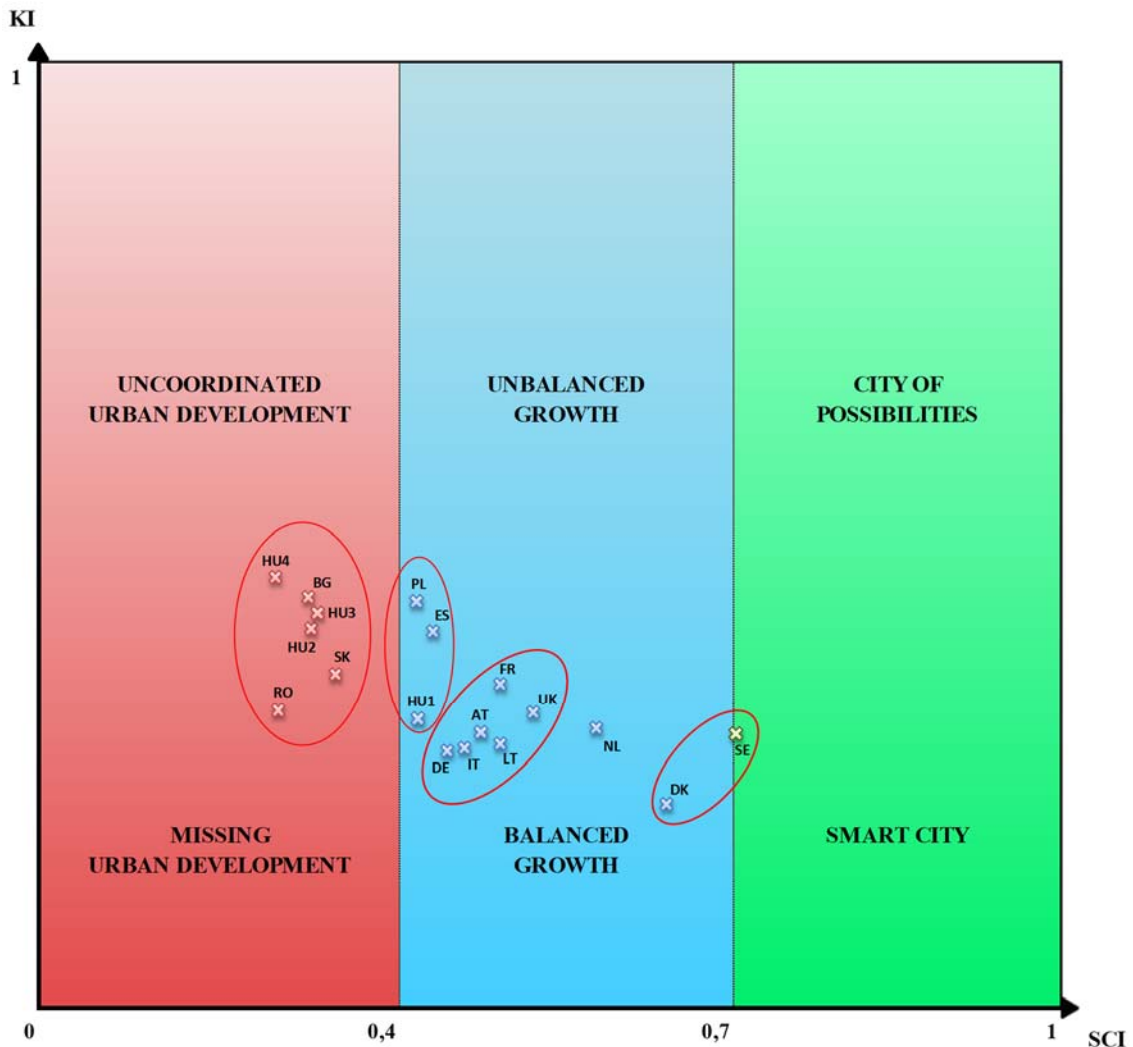


Figure 3: The position of each city in the SCI matrix

Source: own research

The development of Magdeburg is clearly determined by the fact that after German unification in 1990, the German government and the European Union spent a total of EUR 560 billion on the development of the underdeveloped eastern region until 2014 (Greive, 2014). At the same time, the ECB explains the relatively strong convergence performance of Kaunas - and the cities of the Baltic States - with a significant improvement in the quality of institutions, supported by the World Bank-listed WGI data (European Central Bank, 2017).

Of the third group, the situation of Budapest should be highlighted. Among the Hungarian cities, Budapest achieved the highest SCI score with the lowest KI score, but this result is far from being favorable as it was the only capital in the research. According to Eurostat, the territorial distribution of GDP in the Eastern European region is strongly concentrated in capitals, so the distance between the Hungarian capital and the observed western cities is particularly worrying.

The fourth group in the category "uncoordinated urban development" can be considered relatively homogeneous in performance, the results of these countries are in harmony with the results of the European Union regional development studies. All of these cities are part of the 47 lagging regions, these are typically Hungarian, Romanian, Bulgarian, Italian and Spanish regions, for which the European Commission made development recommendations in 2017 (European Commission, 2017).

5. SOCIAL MARKETING

The usefulness and applicability of the results of smart city models have been studied mostly so far in terms of urban development. The purpose of this study is to draw attention to the fact that the results of the models can be used not only in the urban development in the narrower sense, but also in wider sense a social marketing campaigns, too. The purpose of social marketing is to guide the stakeholders towards solving social problems and issues and to develop constructive solutions for the desired change of behavior (Piskóti, 2012).

The most important feature of smart city measuring and evaluating models is that it supports the implementation of urban development with adequate measurement results. In this paper, I would like to point out that it is not sufficient to look at the results and experiences of smart city models from the aspect of urban development, politics or public administration in order to reach the maximum potential of the models. The quantified results of the models can also draw the attention of decision makers to potential areas of social marketing campaigns. The most important benefits of using social marketing in relation with smart city models are that (i) it can bring community, government, and nonprofit stakeholders closer together by creating an integrated approach, (ii) by implementing community involvement, it can implicitly reduce the costs associated with urban development, (iii) it can steer citizens towards behavior that is desirable for government purposes, (iv) in this way, it can contribute to reducing social costs*, (v) with the involvement of the population, it can improve the effectiveness in the focus areas, and (vi) it can reduce the social resistance associated with each development project and it can increase their acceptance, (vii) it can indirectly establish contact between the financially strong investor groups and the city administration, (viii) it can help to spread and transfer of good practices in Hungary and internationally, too.

The KPI model presented above can be a particularly applicable tool for supporting social marketing activities, as it can be used in a time-efficient way to analyze urban development areas, without significant financial input and specialized expertise, compared to the examined other models. Each of the 13 subsystems of the model corresponds to a social problem so it is possible to investigate which social problem the subsystem's indices have in causality. For example, in the model I used the infant mortality rate indicator to describe the health care subsystem, but it is a highly complex indicator (Murphy, 2018). The value of the indicator can be significantly improved by raising the standard of health care, promoting the transition to a healthy lifestyle and encouraging quitting smoking, all of which may be the focus of a targeted social marketing campaign.

In my opinion, the system of relationships outlined in the health subsystem can be identified in all subsystems of the KPI model, so in this way the main focus areas of social marketing can be clearly identified. Overall, the successful KPI model-focused social marketing activities can reduce social costs and they can effectively contribute to raising living standards.

* **Social cost** – Involves the additional costs, damages and lost profits at the society level, regardless of the form (monetary, in-kind, and psychological) and where they occur (citizens, government, and non-profit sector).

6. CONCLUSION

In my research, I have developed a smart city model that efficiently manages the limitations of the previous models examined while preserving their many advantageous features; it makes possible to compare the performance of cities regionally and by time and to evaluate them from the point of view of the examination.

The developed KPI model uses only 19 hard indicators to evaluate and compare the performance of the cities surveyed across five different dimensions and 13 subsystems. The wide international applicability of the model can highlight the differences between the cities, create competition between them, provide an opportunity for city management to adopt good practices, and contribute to identifying the focus areas of social marketing activities.

Defining the relationship between social marketing and smart city and quantifying the impact of social marketing campaigns would certainly lead to useful and interesting conclusions, but this issue is not explored here due to limitations in scope and content, so this is another independent study test area.

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**THE NEUROMARKETING ANALYSIS OF TELEVISION
COMMERCIALS AND THE THEORETICAL BACKGROUND OF THE
ANALYSIS**

László, Nagy

PhD candidate, Miskolci Egyetem Gazdaságtudományi Kar
Vállalkozáselmélet és Gyakorlat Doktori Iskola
1205 Budapest Rákóczi utca 104., 06-70-319-3124
tinamu79@gmail.com

ABSTRACT

My research topic is the examination of the practical and theoretical issues of neuromarketing methodology regarding the effectiveness of advertising, with the scope of exploring the role, perspective and application of this relatively new approach of marketing research to marketing strategy planning and better understanding consumer decision making. This paper, in line with all the recent international researches and theoretical background tries to find an evidence that, so called experiential commercials of emotional product categories generate larger business success through the emotional involvement of consumers. First, I am looking for correlation between emotional involvement and “engagement” neuromarketing metric, using the database of a local neuro-research company examining 350 commercials released in 2018 in the FMCG food&drink and Finance product category. After that, I will examine the connection between the engagement metric value and other business indicators available in the database such as consideration change and activation effect.

1. ATTITUDES AND RESEARCH INTERESTS REGARDING NEUROMARKETING

1.1. The significance of neuromarketing

Starting from the early 2000s a new marketing research method began to gain ground in both business practice and academic research – neuromarketing. The spread of this type of research was made possible by two factors: technological developments that allowed consumer preferences, motivations and expectations to be more readily identified, and the involvement of consumer neuroscience in decision-making investigations, which extended the field of marketing research (Ariely & Berns, 2010). Other factors added to catalyze the development of the field, such as the increasing consumer fragmentation caused by changes in consumer habits. The creation of ever smaller consumer segments has increased the uncertainty of the conventional methods of forecasting, while the demands of advertisers in terms of market research have also undergone changes, with growing expectations for high quality and accurate data, even for these smaller consumer groups. The traditional market research methods are unable to provide exact data in such a situation, as they which depend on assessing consciously articulated answers. For better data, it is essential to analyze the subconscious factors behind consumer decisions, which can be provided by neuromarketing.

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Considering this situation, three areas were identified by Vargas et al. (2013) in which neuromarketing has the potential to contribute to forming more successful and effective marketing strategies.

Neuromarketing can increase market success by:

- providing a more accurate picture than ever before on the characteristics of any consumer group and its decisions,
- more accurate market information than before can lead to more efficient product development, which helps make marketing strategies more successful,
- more effective advertising can be designed due to the findings of neuromarketing investigations on the effectiveness of advertising tools.

This study focuses on the area mentioned in the final point, neuromarketing investigations of effective advertising tools, as well as the theoretical background of such research.

1.2. Opinions on neuromarketing in Hungary

In order to investigate the presence of and opinions on neuromarketing methods in Hungary, a survey was carried out (Piskóti & Nagy, 2019) based on that of Eser et al. (2011). We investigated the familiarity, opinions and attitudes of various experts regarding neuromarketing research. In the original study, Eser et al. (2011) began with focus groups and then surveyed three different groups – marketing researchers (academics), marketing experts (practitioners), and neurologists – using an online questionnaire. The aim was to identify their positions on neuromarketing methodology. We adopted their method, using online questionnaires for the same groups of experts. In addition to the questions included in the original study, we added some questions of our own regarding how neuromarketing is used and prospective uses of it.

Our findings led us to draw some conclusions that can act as a starting point.

- 41% of the respondents possessed no or little information on neuromarketing research. While the rest had heard of it, only 7% considered themselves fully familiar with the topic. Thus, we cannot say that neuromarketing research is well known or a fact of life in marketing practice in Hungary.
- This conclusion is further strengthened by the fact that 69% of those questioned do not use neuromarketing research, nor have they taken part in it. However, almost three quarters of the respondents have indirectly encountered this research method in marketing practice.
- We found that attitudes towards neuromarketing as a means of research into consumer behavior and decision making were generally positive, though a certain amount of caution was expressed.
- Respondents considered neuromarketing research to be useful combined with traditional marketing research methods, rather than as a replacement for them.

We observed that the experts questioned are open to neuromarketing, with no strong reservations regarding ethical issues. They tend to agree that the theoretical basis is currently weaker than its application in practice, and that it is something that should be given more attention by researchers in the future. Looking at the opinions of marketing experts and researchers separately, however, a more complex picture emerges. The expectations of practitioners for gaining a better understanding of consumer behavior and decision making

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through neuromarketing research are much more positive than those of the more theoretically oriented experts. Practitioners are more open due to the hope for using research results, while the academic researchers were less interested in the field of neuromarketing. In our questionnaire, we asked which marketing fields would be most likely to apply neuromarketing research methods and which would gain the largest benefits from it (Figure 1). Respondents generally thought it would be most useful in testing product design and packaging and in assessing the effectiveness of advertising, and least useful in product pricing.

Figure 1. – Neuromarketing research interests



Source: Piskóti & Nagy (2019)

Overall, interest and expectations were higher among the marketing experts, who are hoping for information from neuromarketing research that can be readily applied to practice, particularly in the advertising and sales of products. The interest of those teaching and researching in the field of marketing is more moderate, as their theoretical background in this area is not strong and does not encourage them to feel that neuromarketing research could be a useful tool; rather, they consider it relevant and useful to just a few areas of marketing.

1.3. International trends in neuromarketing research

While reviewing the international research I became curious particularly about advertising impact and effectiveness testing with neuromarketing tools. This is also the field in which the Hungarian respondents showed the most interest. I wondered how much it is being researched, what opinions are of it in other countries, and what development trends can be identified. I took Lim's 2018 study in the *Journal of Business Research* as a basis. Lim (2018) performed a content analysis of articles in all of the marketing journals under the Association of Business Schools (ABS). He classified 66 academic outlets into categories based on their prestige:

- Type 4* - a world elite journal (5 marketing journals, 7.6 % of all ABS journals)
- Type 4 – a top journal (3 marketing journals, 4.5%)
- Type 3 – a highly regarded journal (12 journals, 18.2%)
- Type 2 – well-regarded journal (21 journals, 31.8%)
- Type 1 – a recognized journal (25 journals, 37.9%).

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Publications on neuromarketing appeared in 21 of the 66 journals, with 78 articles in all between 2004 – 2017. The largest number of articles on neuromarketing were published in Type 2 journals (33 articles, 42.3% of all neuromarketing articles), followed by Type 4* (17 articles, 21.8%), then Type 3 (19 articles, 24.3%), then Type 1 (8 articles, 10.3%) and finally Type 4 (1 article, 1.3%). Four special issues appeared in the journals, two in 2008, one in 2015 and the most recent in 2016. Many of the publications (33 articles, 42.3%) dealt with research using a neuroimaging procedure (fMRI EEG). This is followed by articles on theoretical aspects and reviews of the topic (31 publications, 39.7%) and then by research done using non-neuroimaging procedures (16 publications, 20.5%) and research done with conventional marketing research methods (4 publications, 5.1%). Lim divides the specific research topics into eight categories:

- introductions to neuromarketing, general information (29 publications, 37.2%)
- neuromarketing analyses of advertisements (17 publications 21.8%)
- introducing new insights in branding (13 publications, 16.7%)
- investigations of consumer decision-making processes (9 publications, 11.5%)
- studies on product packaging (4 publications, 5.1%)
- studies related to pricing (3 publications, 3.8%)
- opinions and attitudes on neuromarketing (2 publications, 2.6%)
- other (1 publication, 1.3%)

The results of Lim's international meta-analysis clearly show that, similar to the Hungarians surveyed, the focus in neuromarketing research is most often on examination of advertising tools and advertising effectiveness. Based on these findings, my research topic is in line with international trends and deals with the area that is drawing the most attention in neuromarketing research. The complexity of the topic is demonstrated by the fact that, despite the particular attention being given to it by researchers, there are still many areas to be explored in the specific aspects of consumer decisions and their relationship to advertising. Well-founded and extensive research in these topics is still in its early stages.

2. THEORETICAL ASPECTS OF THE NEUROMARKETING RESEARCH OF TELEVISION COMMERCIALS

2.1. Types of television commercials

It is an accepted fact that the part of our brains labeled the "reptile brain" is most receptive to visual stimuli and to emotions; this is where the newest studies consider to be the true birthplaces of our decisions (Renvoisé, 2007). The importance of visual stimulation and the role of emotions in buying decisions are both areas that conventional marketing research methods either cannot reveal and map or can do so only vaguely when compared to neuromarketing research methods. From this, it is clear why television commercials and other forms of advertising are so important, as the visual stimuli and the feelings generated by them influence most of our decisions on the most basic level, and this is true of consumer decision making, as well. It is worth noting that memory, especially long-term memory, is even more strongly affected by smells and sounds than by visual stimuli, but research up to this point has shown that long-term memory has no direct effect on consumer decision making; the impact of brand recognition and the product image are the main factors (Jones, 2006).

The most common application by far of neuromarketing research is to television commercials. This is demonstrated by the fact that the Advertising Research Foundation (ARF) showed major interest in neuroscience techniques from an early stage, looking at the added value appearing

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in advertising (Smidts et al., 2014). Despite the massive resources put into it, advertising effectiveness testing is still a rather unexplored and poorly understood area of marketing. Although advertisements have been investigated in several neuromarketing research studies, it is still unclear whether we will be able to identify through neuroimaging research what effect mechanism exists in the brain, and whether we will be able to predict an advertisement's impact (Ariely & Berns, 2010). With neuromarketing research on television commercials, we must clearly distinguish between two different approaches: experiential[†] (we could call it image-focused) and functional (promotion or sales-focused). Typically, the functional advertisements are strongly focused on the functional features of a given product, on conveying quasi-factual information on it and on the price of the goods, both of which can help the viewer when buying the product. In contrast, with experiential advertisements the presentation of the advantages of the product or its use(s) is not the central focus, rather they take an indirect and creative approach that appeals to the emotions to portray positive associations with the product. It is important to note that in most cases we cannot speak of a purely experiential or purely functional advertisement; it is typical for both types of message to be combined to some extent in almost every advertisement.

In their research, Johar and Sirgy (1991) showed that the choice of approach depends on the given product, when all goes well. For instance, if we are advertising a simple and practical object it is suitable to use a functional type of advertisement. On the other hand, Ang and Lim (2006) found that in some cases a different and more creative advertisement is capable of strengthening a feeling of sophistication and the desire to possess the product, regardless of its product category and even for basic everyday items, though viewers also saw the advertisement as less honest. There is no clear standpoint on the issue of whether advertising combining both aspects is a good approach, or rather to be avoided, and if they are mixed, in what ratio. Some researchers propose that a hybrid approach is less effective (Small et al., 2007), and eye-tracking studies have even shown that viewers are more likely to interrupt their television viewing when watching hybrid advertisements (Woltman Elpers et al., 2003).

Other studies, however, have found that any commercial that employs emotional content increases its effectiveness, regardless of the type of product or message (Pham et al., 2013). Others have found that the presence of functional messages is more important and should be emphasized, so that the advertisement appeals not just to emotions but also contains cognitive stimulation, unlike experiential commercials (Zarantonello et al., 2013). In regard to the effectiveness and efficiency of advertising, not just product category but also sociocultural factors play a major role. For instance, residents of developing and developed nations react differently to the same functional and experiential advertisements (Zarantonello et al., 2013).

The current unified academic viewpoint is that the two different types of advertising messages affect consumer decision making in different ways, but there is no agreement on how this works. Some researchers say that functional advertisements, with their information of products and evaluation influence on the cognitive level and reduce the uncertainty of consumers, allowing their thinking to be freed up on some level, lightening the burden of decision making and evaluation (Yoo and MacInnis, 2005). Advertisements with an emotional and creative approach create a warm effect and promote positive attitudes towards brands, using emotions to increase the appeal of a brand and the willingness to purchase the item in question (Aaker et al., 1986). If these claims are investigated on the level of processes in the brain, then differences in the processing of information are seen.

Based on this theory, it is possible to distinguish between continuous and non-continuous information processing mechanisms. Continuous processing is typically associated with experiential messages, where the consumer spontaneously processes the information,

[†] The terminology is borrowed from Abernethy & Franke (1996), Schmitt & Zarantonello (2013). and Couwenberg et al. (2017).

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unconsciously, and this shows a positive correlation with the appeal of a given product. Non-continuous processing, which is conscious, becomes more intermittent and fragmented, because the brain is assessing the information given and attempting to judge what value each bit of information holds for the viewer. During this fragmented process, it makes it easier on the brain if the information given proves to be truly valuable in the decision making of the consumer (Brakus et al., 2014). Finally, it is useful to identify (based on Couwenberg et al., 2017) those elements of advertisements that are most likely to determine a given advertisement's type and its proportion of functional and experiential attributes.

The characteristics of functional advertising that may appear in commercials:

- product attributes
- product application
- product performance
- functional benefits
- functional value of products.

Elements characteristic of experiential advertising that may appear in commercials:

- sensory elements
- feelings and emotions
- imagination and mental stimulation
- behaviors and actions.

2.2. Instruments of neuromarketing research

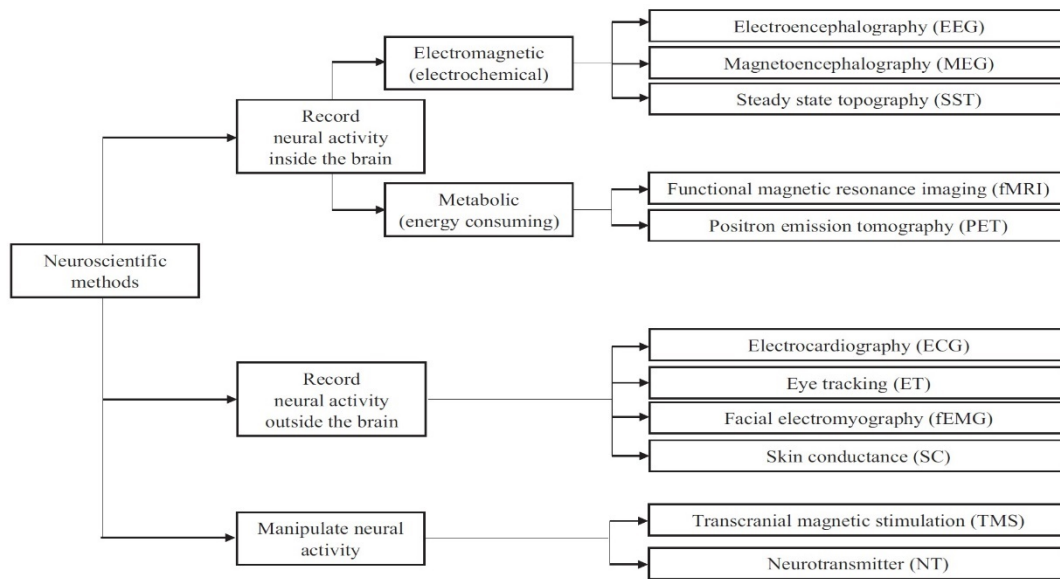
The tools used in neuromarketing research can be classified along different lines. The simplest approach is to classify them based on the principle of operation (Bercea, 2012):

- Tools that record metabolic activity in the brain: Positron emission tomography (PET), functional magnetic resonance imaging (fMRI)
- Tools that record electric activity in the brain: Steady state topography (SST), transcranial magnetic stimulation (TMS), magnetoencephalography (MEG), electroencephalography (EEG)
- Tools that do not record brain activity: facial coding, implicit association test, eye tracking, skin conductance, facial electromyography, measuring physiological responses.

A rather more complex method is to group the tools used by different neuromarketing methodologies (Figure 2). This leads to three groups (Lim, 2018):

- neuroscience instruments and techniques that record the neural activity inside the brain,
- neuroscience instruments and techniques that record the neural activity outside the brain,
- neuroscience methodologies to control and manipulate the neural activity.

Figure 2. Classification of neuroscience methods



Source: Lim (2018)

The currently accepted academic standards determine which instruments in what combinations are to be used in order to provide results that are considered reliable and convincing. Due to its cost effectiveness, the most typical technologies at this point are eye-tracking cameras, EEG and various instruments for measuring biometrical reactions, or some combination of these. When considering neuromarketing research it is important to emphasize that the human brain's generally identical structure (though influenced by basic factors such as sex and age) means that a large number of samples are usually not required during researches. Typically 15-20 subjects are considered enough for research, though naturally the larger sample we deal with, the higher quality the data and the easier it is to process it. In the case of a small sample, a legitimate question may arise as to whether the factors influencing consumer behavior are as impossible to identify on a statistical basis without distortion as are personality factors or even intelligence. There is no clear answer to this question at this time.

Regarding personality, the current academic viewpoint is that it is difficult to link consumer behavior with personality factors with any degree of scientific certainty, given the individuality of each person, as consumer behavior is rooted in the brain cells while personality originates rather from DNA. However, research has proven that the amount of gray matter in the area responsible for personality factors of a given subject does react in response to marketing stimuli. (Plassmann and Weber, 2015). Thus, it may be the case that personality can make a major difference in the consumer behavior of two consumers of similar demographic groups, but this can be shown using current neuromarketing research methodologies only through evidence provided by much larger collections of data.

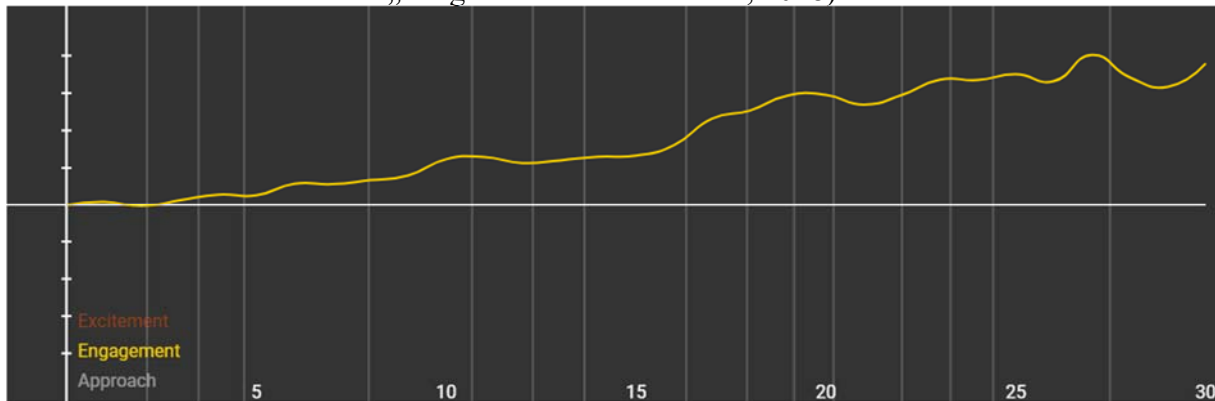
3. RESULTS OF NEUROMARKETING RESEARCH ON TELEVISION COMMERCIALS

3.1. Research details

For this research of television commercials, the neuromarketing data of advertising effectiveness reports carried out by Synetiq Kft. (a neuromarketing research company) was used with the consent of the company. The studies were carried out on a between January 1, 2018 and December 31, 2018 to examine all new television commercials appearing monthly in the categories of financial products and fast-moving consumer goods exclusively food and drink (FMCG food&drink). Data was recorded monthly, with a minimum of 160 participants (testers) each month, who are of 18-59 ABC Esomar status, active television viewers and internet users. In each monthly study 80 commercials were selected for testing, and each commercial was tested by at least 75 people. For these studies neuroscientific tools were used that can measure neural activity inside and outside the brain. An EMOTIV EPOC 14-channel EEG headset was used to record EEG signals, galvanic skin response (GSR) and heart rate (PPG) data, in addition to continuous eye tracking data. Throughout the study period the participants watch a specially edited “show” of about one hour in length, of which approximately 20 minutes is used for calibration and setting the benchmark for every tester. During this time the emotional state of the individual is assessed and data on alterations in emotions for each individual and situation is determined for later use in complex analyses and interpretation. Each tester watched two sets of 20 commercials presented in random order and chosen randomly from the commercials selected for testing. The randomization of commercials for different product categories or advertisers were carefully rotated in the commercial sets not to overemphasize or neglect any product category, advertiser, or product involved in the study. The data were converted into emotional metrics at one-second intervals, indicating approach, engagement, and excitement. In addition to the neuromarketing tools, which primarily measure the emotional metrics, the study was supplemented by a three-phase questionnaire study. Screening of potential respondents included a health check to ascertain suitable physical condition for the instrumental testing and demographic information such as sex was recorded. Before watching the edited “show” each participant filled out a questionnaire at home on preferences for, consumption of, and assessment of brands within the categories being investigated (category usage, aided ad recall and brand consideration). During the research, after each commercial basic questions were asked on a screen to reveal any prompt information and impact (activation, relevance, brand fit, and perceived reach); after viewing both sets of commercials there were spontaneous and aided ad recall tests and questions on changes in consideration. The emotional index of engagement chosen for this study measures the viewers’ interest, emotional involvement and feeling of relevance and indicates a consumer’s overall feeling of closeness to an advertisement or a brand. Successful engagement metric is considered to be high for a given commercial if it is positive and shows a trend to increase steadily, without sudden changes (Figure 3).

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Figure 3. Sample engagement curve for a television commercial (Krusovice, 30 sec, „Kingdom” TV commercial, 2018)

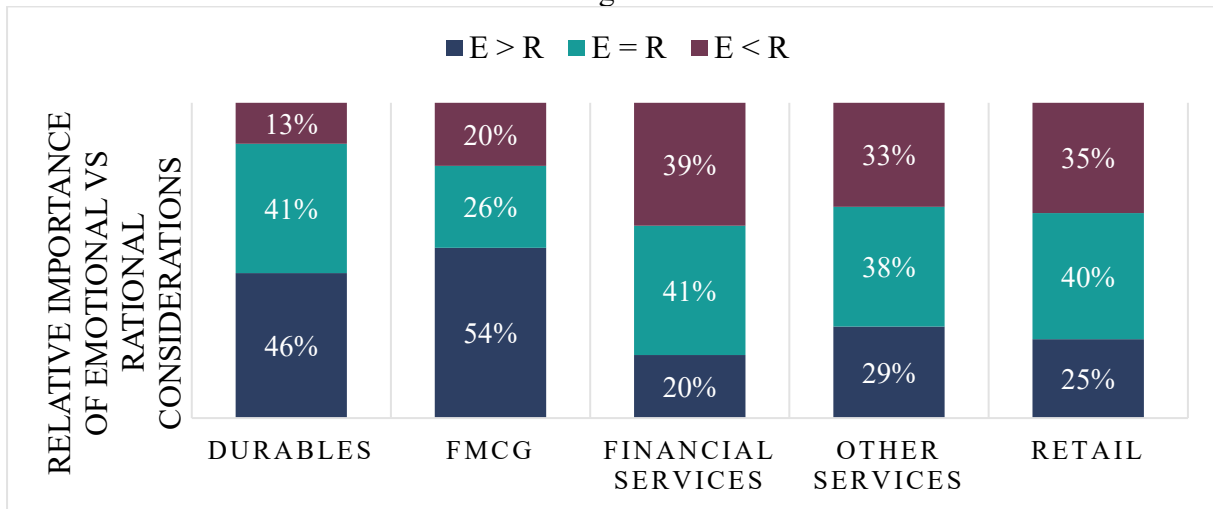


Source: Synetiq ad tracking database

The investigation was of 350 new television commercials in the fields of financial and fast-moving consumer goods (FMCG food&drink) broadcast in 2018. These categories were selected based on the work of Binet and Field (2018), which looked at the effectiveness of advertisements as a result of factors such as product category, pricing or innovation. This particular study is an important reference point, as it used the database of the IPA (Institution of Practitioners in Advertising) consisting of 615 international case studies, which advertisers and advertising agencies had contributed along with data on sales. In the study, the researchers drew a clear distinction between activational and emotional advertisements, which essentially correspond to the categories of functional and experiential advertisements introduced earlier in this paper. In their study of these advertisements Binet and Field determine the different categories of products also by taking into account the mechanisms of consideration that influence the advertisement's success, the consumer's decision to buy or not. Naturally, as the types of advertisements are hardly pure, the consideration mechanism has a certain degree of emotional consideration and of rational consideration. They found that emotional consideration has the largest proportion (54%) and rational consideration the lowest (20%) in the purchase of fast-moving consumer goods. In contrast, financial services is the category where the rate of emotional consideration is the least (20%) and the most significant is rational consideration (39%) prior to consumption (Figure 4).

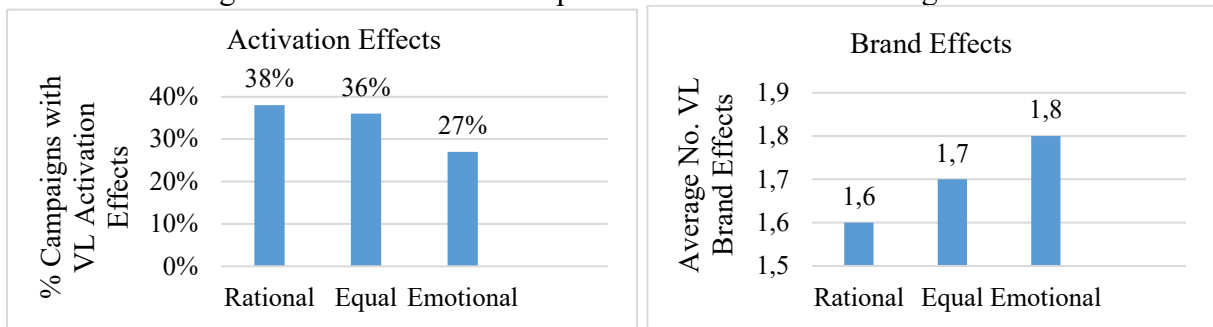
When evaluating the effectiveness of the campaigns, Binet and Field (2018) established that in the case of categories triggering emotional consideration, emotion-based advertising had a larger and more direct effect on business, while categories in which rational consideration is more important experienced more success and higher sales when using promotional, activational type advertisements (Figure 5).

Figure 4. Proportion of emotional (E) versus rational (R) consideration of different product categories



Source: Binet & Field (2018)

Figure 5. Different decision processes and their marketing effects



Source: Binet& Field (2018)

Hypothesis: In line with all the researches and theoretical background, mentioned in this paper earlier, my hypothesis is that experiential commercials of emotional product categories generate larger business success through the emotional involvement of consumers, which results bigger engagement values and higher consideration of buying. Which inversely means that measuring engagement, a neuromarketing metric, we can be able to predict the emotional involvement, and through this the expectable success or failure of a TV commercial.

3.2. Results

In the current research I attempt to answer the question of whether that correlation can be found using the emotional metric of engagement measured using neuromarketing research methods. First using the engagement values measured each second, I calculated an overall average engagement value and then ranked all the commercials according to this. Identified the top ten commercials that triggered emotional engagement; the first eight were FMCG commercials, while the remaining places were taken by commercials from the financial sector. Next I used the system of Couwenberg et al. (2017) to determine whether the commercial was more strongly experiential or functional.

For this evaluation I asked the opinions of five marketing experts, each with more than ten years of experience in advertising. The five experts viewed the commercials and gave them points on

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a scale of 1 to 4 on five functional and four experiential attributes. From these scores I drew up the emotional average for each of the ten commercials.

Table 1. Correlation analysis of the top 10 TV commercials

	Ad name	Engagement (mean)	Experiential value (mean)	Consideration change	Activation
1	KRUSOVICE - 30s - KINGDOM	0,118	3,50	18	74
2	COCA-COLA ZERO - 30s - mr.hadley-még nem próbált dolgok	0,109	3,75	13	93
3	BARILLA - 30s - roger federer-davide oldani	0,108	3,25	35	84
4	DANONE KÖNNYŰ ÉS FINOM - 20s - 30%-kal több fehérje	0,105	3,00	8	82
5	SOPRONI ÓVATOS DUHAJ - 20s - peches pali-ami közös bennünk	0,096	3,25	-5	61
6	7DAYS MINI - 40s - kávézós izgalmak:croissant+biscuit	0,093	3,25	0	75
7	DREHER PALE ALE - 15s - trellay levente+3-féle komló	0,091	2,50	9	86
8	SIÓ - 30s - mesélő gyümölcsök:csodatévó gazdák	0,087	2,50	4	87
9	RAIFFEISEN - 30s - GARÁZSZENEKAR-HÁZ /THM:3,01-5,85%	0,083	2,25	12	36
10	OTP - 30s - görcz veronika+dóri:ötszörös vissza	0,080	2,25	3	36
Correlation Engagement (mean) vs			0,863795462	0,529706622	0,589549291

Source: Synetiq ad tracking database (filtered to only TVC, only Finance+FMCG food&drink, only 2018)

Before analysing the results (Table 1), I carried out an inter-rater reliability test, which showed strong homogeneity among the values chosen by the five experts (median: $r=0.95$, range: $r=0.89$ to $r=0.97$), well exceeding the value of 0.80 considered by Cicchetti (1994) as reliable and permitting use of the data in analysis. Next, I looked at the relationship between the measured results for engagement for each advertisement and the emotional average as rated by the experts; a strong same-direction correlation of 0.86 was found. Essentially, this proves that the commercials judged by the experts to be more emotional were actually viewed with a higher degree of engagement by the testers. However, this does not yet prove the hypothesis, as the fact that experiential-type commercials have a stronger effect when used in product categories ranked as requiring more emotional consideration does not in itself mean that experiential commercials are more effective and lead to more success in business and to higher sales. In order to prove this, I considered the questionnaire data collected by Synetiq Kft. prior to and during testing of the ten commercials rated as the most emotionally engaging. I examined the consideration before-after, since these reveal the changes in consideration, and I also used data on the activation registered after viewing the commercial, which shows the actual degree of intention to buy the product as a result of the commercial. Averaged engagement had a moderately strong correlation with changes in consideration ($r=0.53$), which clearly shows that there is a correlation between these factors, thus proving that commercials triggering stronger emotional reactions result in significantly stronger positive changes in intention to purchase. Taking into consideration the earlier discussed correlation between product categories calling up emotional or rational consideration and the type of advertisement (Binet & Field, 2018), I decided to repeat the investigation after removing the data for the two commercials in the financial services category. The correlation of averaged engagement and changes in consideration for the eight FMCG food&drink commercials was substantially higher ($r=0.61$). This result points out that further research is needed with a larger sample of commercials and involving a larger number of product categories.

For the concrete intention of the consumer to purchase – the activation effect of the commercial – I found a moderately strong correlation ($r=0.59$) between the activation power of a given commercial and the averaged engagement value for it, meaning that restricting the investigation to a particular product category reduces the strength of the correlation. This phenomenon, just as with the changes in consideration, suggests the need for further research.

4. CONCLUSION

This investigation of television commercials released in 2018, using both neuromarketing research data and data from questionnaires, proves that the emotional performance of a commercial and the degree of engagement triggered by it are strongly related to the type of commercial (functional or experiential) and by the product category being advertised (needing emotional consideration or rational consideration). It also reveals a moderately strong correlation between the emotional response to a commercial and the viewer's intention to buy the advertised product, which easily can be translated into the general success of a commercial from a business point of view. However, despite all these results, my hypothesis as a whole can't be looked valid as there were associations testified by only moderate correlations and a phenomenon of activation that can't be explained based on the current research data. Therefore, as a conclusion, even if the engagement neuromarketing metric seems to be a good indicator of an emotional involvement of viewers, connecting it with a direct business effect needs further research with a larger number of commercials and more product categories involved. The research into correlations should be extended for example, by involving other emotional metrics (approach, excitement) recorded with neuromarketing researches in the future.

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**INVESTIGATING RAW MATERIALS FOR MODERN BATTERIES
AND DISPLAYS FROM THE ECONOMIST'S PERSPECTIVE -
INDIUM***

Zsolt, Péter

Associate professor, University of Miskolc, Institute of World- and Regional Economics,
3515 Miskolc-Egyetemváros, 06-46-565-111
regpzs@uni-miskolc.hu

Dániel, Orosz

Ph.D student, University of Miskolc, Institute of World- and Regional Economics
3515 Miskolc-Egyetemváros, 06-46-565111
regorosz@uni-miskolc.hu

SUMMARY

The use of batteries is now inevitable in our daily activities. While decades ago, only a few dry batteries were used in households, batteries almost could only be found in passenger cars, now even the aggregation of areas of use can be a serious task for the researcher.

In our study, we focus on indium commonly used in lithium batteries and LCDs, we will examine which parts of the world have the most important cobalt resources, with the help of the literature we collect past events and the expected trends in the volume of use and for the (predicted) market prices.

1. INDIUM - A LESS KNOWN BUT IMPORTANT METAL

The Indium is a relatively rare element because there are relatively few indium-containing minerals. It is most commonly found in some zinc ores, but also can be found in lead, tin and copper ores. The world's minable indium reserves are estimated at 15,000 tones, of which more than two-thirds are in China. An estimate of the Indium Corporation of America, including all possible reserves and liabilities are 50,000 tons. Of this, around 47% is in China and the CIS, and 53% in other countries. The indium is widely used in displays, optical and control systems, in permanent magnets, in other high-tech devices (Skirrow et al. 2013).

2. THE DISCOVERY AND USE OF INDIUM

Indium was discovered by Ferdinand Reich in 1863 at the Freiberg School of Mining in Germany. Reich examined a mineral that he thought contained thallium, the material was examined by spectroscope with the help of his colleague Hieronym Richter and they discovered that a new element had been discovered. Based on the purple colour seen in the spectroscope, the Latin equivalent of the purple colour (Indium) was chosen for the name of the new metal, however, the collaboration between the two researchers broke, when Reich learned that Richter, on a trip to Paris, claimed that he alone had covered the new material (M. Lokanc, R. Eggert, M. Redlinger, 2015).

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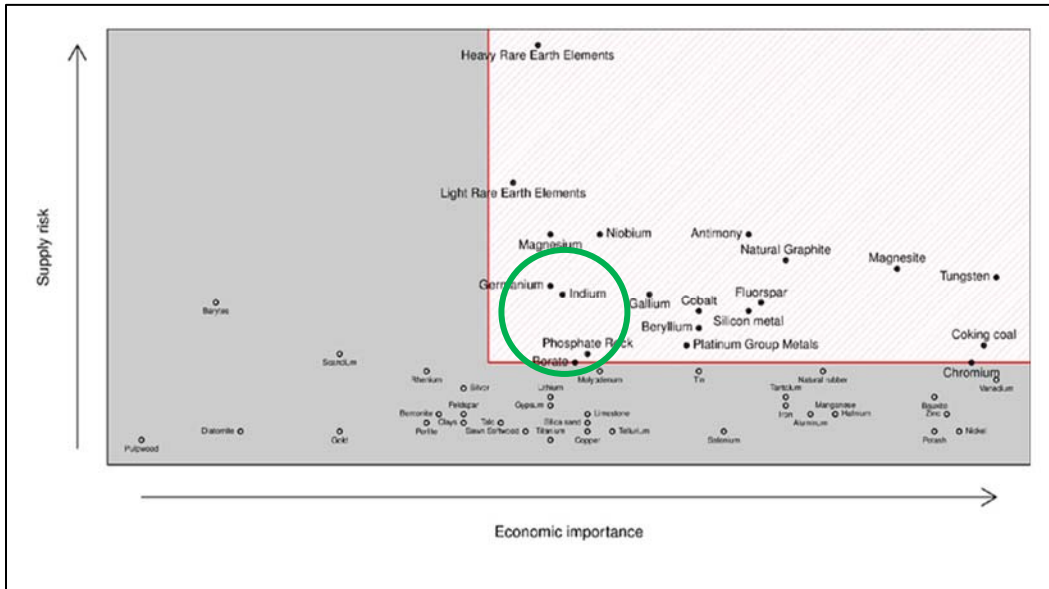
By 1924, the world's isolated indium stock was around 1 gr. Currently 134pprox.. 500 tonnes are mined and 134pprox.. 650 tonnes are produced through recycling. Indium is a relatively rare metal; every ten millionth atom is indium. It is typically found in ore zinc and is mainly produced from zinc processing waste. It is moderately toxic metal by inhalation and slightly toxic if swallowed. Indium is a soft, high-gloss metal with a low melting point, which gives a characteristic sound when it is burned (Tolcin, A. C. 2014).

It has the advantage of being soft and usable at very low temperatures, this property allows it to be used in equipment with temperatures close to absolute zero. It is used in cryogenic pumps, high vacuum systems, for applications requiring customized sealing. Indium can adhere to irregular surfaces, adheres very well to itself or to other metals in pure form, used as a soldering iron, in batteries, and rechargeable batteries, in electronic devices, and in scientific research. Soluble in acids, does not react with oxygen at room temperature, at higher temperatures, indium oxide can be created, which is a transparent compound that conducts electric current It. can be applied as a thin coating on glass or plastic films. The most important compound used is indium tin oxide or "ITO". Approx. 45% of the total indium is used to produce ITO. The compound is used in solar panels, flat panel displays, it is also used to coat windscreens for airplanes and vehicles (Willis et al. 2012).

Whereas there is less and less availability of the indium market, while the number of applications and the amount used are constantly increasing, all leading to significant price increases and led to shortage. At present, due to increased recycling and recovery efficiency, there is some kind of balance between supply and demand (SMG Indium, 2014).

3. INDIUM AS A CRITICAL RAW MATERIAL AND THE END USE OF APPLICATIONNS OF INDUIM

Raw materials are very important from the point of view of the development of the world and European economy. The industry needs them to create a wide range of goods and services. "Some of them are rare and has unreliable access that's why the European Commission has defined a list of the critical raw materials (CRMs)." They are measured by two dimensions: supply risk and their economic importance. The list and its raw materials are regularly updated and revised. The First list of CRMs was made in 2011 (14 CRMs). The Commission updates it every 3 years to reflect production, market and technological developments. The second list of CRMs was published in 2014 (20 CRMs total) and the latest list of CRMs in 2017 (with 27 CRMs) (Figure 1). (Péter Zs. – Orosz D., 2019)

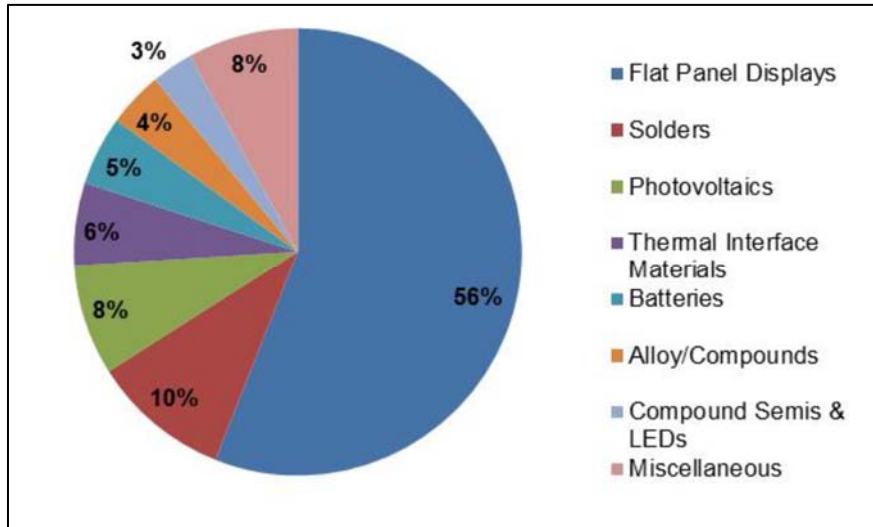


1. figure: The position of indium in the European Commission's critically matrix raw materials (2017)
Source: ec.europa.eu

The critical elements were chosen because they are needed for the modern technology (e.g. mobile phones, flat screens, computers), some of them are connected with clean technologies (e.g. solar panels, electric vehicles, led lighting etc.) others are essential for the traditional industries. The list of CRMs is helping the competitiveness of European industry, stimulating the production of CRMs by enhancing mining and recycling activities thanks to the EU circular economy action plan, and helps to increase awareness of potential supply risks (ec.europa.eu) Indium is globally recognized as 'critical' as it is counted critical by the European Commission too.

Indium consumption in 2012 was estimated to be ~1,500 tonnes and was driven by LCD monitors industry in the manufacturing of flat-panel, touch-screen, and plasma displays for televisions, computers, and handheld electronic devices. This market grew rapidly over the past 10 years. (Willis et al. 2012).

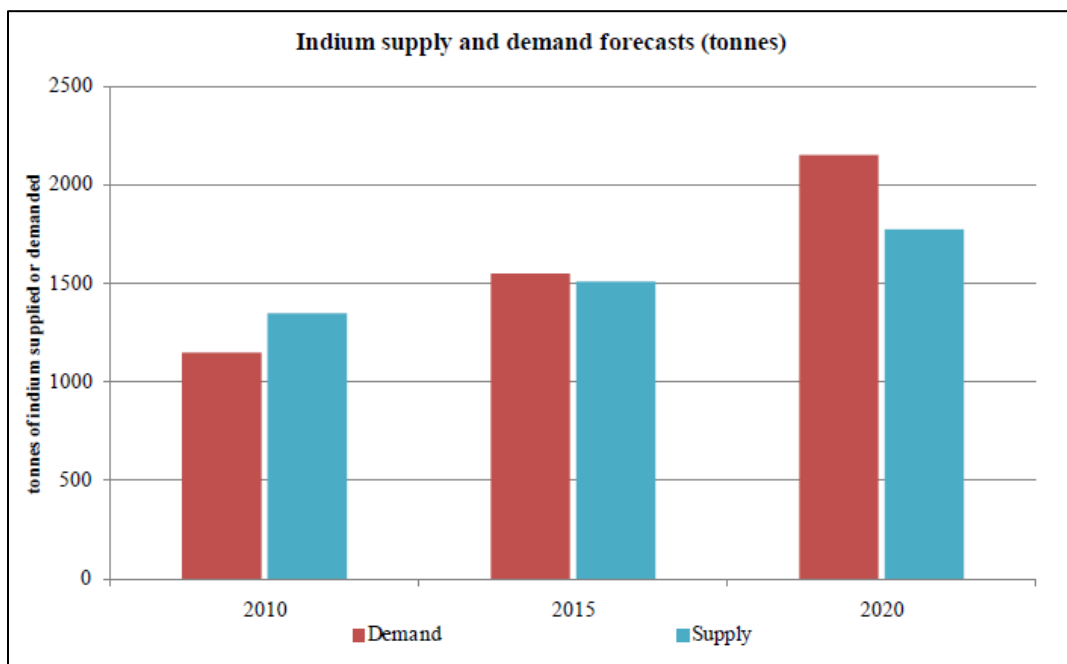
Indium's use in photovoltaic (PV) in the form of copper-indium-gallium-selenide (CIGS) solar panels is relatively recent. Although it represents only a small fraction of current total indium demand, improvements in both the efficiency and material intensity of CIGS solar cells can propel this technology to be a major source of future indium demand. Currently, CIGS technology requires ~23 tonnes of indium per gigawatt (Woodhouse et al. 2012); hence, deployment of CIGS solar panels in the tens or hundreds of gigawatts per year would require substantial increases in indium production relative to current levels. 56% of indium used in flat panel displays.



2. figure: End use applications of indium
Source: Willis et al. 2012

The remaining % of indium is used in a variety of applications such as solders, thermal interface materials, batteries, compound semis, light-emitting diodes (LEDs), and other applications (Willis et al. 2012) (Figure 2).

Future demand for indium will be driven by flat-panel displays and PV. Moss et al. (2011) expect the market to move from a small surplus to a significant deficit in 2020 (Figure 3). Gibson and Hayes (2011) estimate that increased demand in PV could cause indium demand to increase at a rate of 15% per year; expansion of zinc production (the source of indium) is estimated to increase at only ~1% to 3% per year.



3. figure: Forecasting the demand and supply of indium
Source: Moss et al. 2011

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Gibson and Hayes (2011) note that indium is also associated with some silver deposits. Because silver deposits are generally smaller than many large base metal deposits, indium may well make up a material part of the total revenue stream. Thus, they view indium production with silver as an attractive and stable alternative to by production from base metals.

Despite its association with a number of other metals, including silver, and because reported information is lacking, estimates of indium reserves are based on average indium content of zinc ores rather than direct assessment of indium reserves. Although these estimates represent only a small fraction of the total indium that is potentially recoverable from the Earth's crust, they provide a snapshot of known resources, their levels, and their locations.⁷ Indium reserves were ~15,000 tonnes in 2013; China has more than two thirds of the global reserves (Table 1).

1. table: Global indium reserves

	Indium Reserves (tonnes indium metal)		Share of Indium Reserves	
	2007 ^a	2013 ^b	2007	2013
Canada ^c	150	180	1%	1%
China	8,000	10,400	75%	69%
Peru	360	480	3%	3%
Russia	80	80	1%	1%
United States	280	200	3%	1%
Other ^d	1,800	3,700	17%	25%
Total	11,000	15,000	100%	100%

Source: M. Lokanc, R. Eggert, and M. Redlinger, 2015

Not considered in these estimates is the recoverable indium in copper, lead, tin and silver deposits, or in discarded residues, slag, or tailings. Although the potential reserves and resources in these non-zinc deposits are not currently quantifiable, according to Indium Corporation of America (Indium Corp.) ~15,000 tonnes of indium are contained residues, slag, and tailings, and annual increases from new residue generation are ~500 tonnes (Mikolajczak 2009).

2. table: Estimated production of indium (kg) (2011-2018)

Country	Year							
	2011	2012	2013	2014	2015	2016	2017	2018
<i>Belgium</i>	30,000	30,000	30,000	28,000	20,000	25,000	20,000	20,000
<i>Canada</i>	77,000	65,000	70,000	67,000	70,000	65,000	67,000	70,000
<i>China</i>	380,000	405,000	415,000	460,000	350,000	290,000	287,000	300,000
<i>France</i>	-	13,000	33,000	43,000	41,000	-	30,000	50,000
<i>Japan</i>	70,000	71,000	72,000	70,000	70,000	70,000	70,000	70,000
<i>Korea, Republic of</i>	155,000	180,000	175,000	195,000	195,000	195,000	225,000	230,000
<i>Peru</i>	2,499	11,080	14,000	14,000	9,000	5,000	10,000	10,000
<i>Russia</i>	6,000	9,000	9,500	4,000	4,000	5,000	5,000	5,000
Total	720,499	784,080	818,500	881,000	759,000	655,000	714,000	755,000

Source: own compilation based on U.S. Geological Survey, 2017 & 2019,

Table 2 shows the largest producing countries of indium from 2011 to 2018. China, Republic of Korea, Canada and Japan are the largest producers nowadays.

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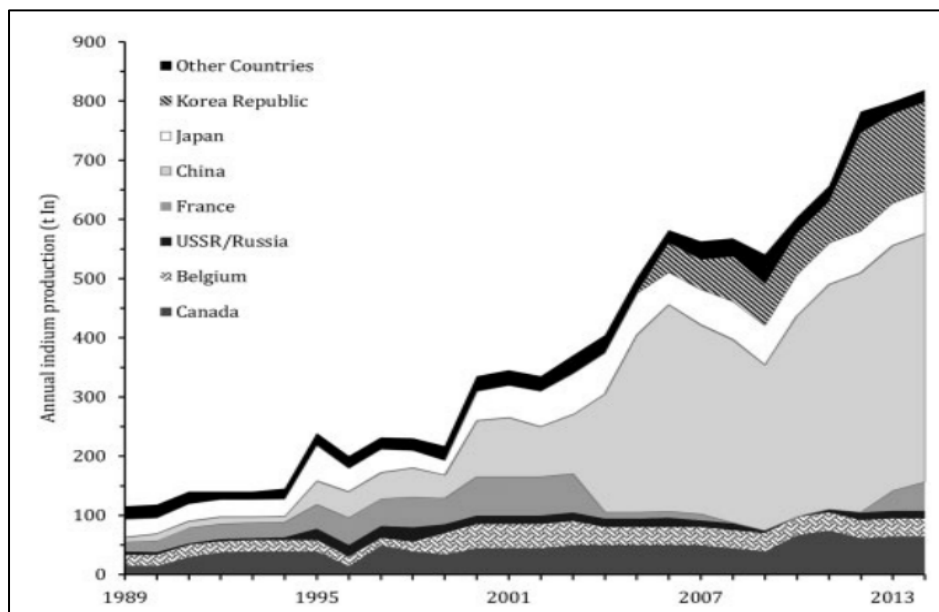
Table 3 shows that China refined the most indium from mining sources from 2009 to 2013. Important refiner countries were Japan, Canada and Belgium. The total volume of refined indium was 770 tonnes in 2013, of which China alone supplied 410 tonnes.

3. table: Refining of indium from mining sources (t) (2009–2013)

	2009 ^b	2010 ^c	2011 ^c	2011 ^d	2012 ^e	2013 ^e
Belgium	30	30	30	50	30	30
Brazil	5	5	5	4	N/A	N/A
Canada	41	67	65	52	62	65
China	275	340	340	318	405	410
France	N/A	N/A	N/A	40	N/A	N/A
Germany	15	N/A	N/A	20	N/A	N/A
Japan	55	70	70	110	71	71
Netherlands	N/A	N/A	N/A	2	N/A	N/A
Peru	5	N/A	N/A	76	11	10
Russia	20	N/A	N/A	17	13	13
South Korea	70	70	100	135	165	150
United States	4	N/A	N/A	N/A	N/A	N/A
Other	13	27	30	N/A	25	25
Total	533	609	640	822	782	770

Source: Moss et al., 2011

Figure 4 shows the per-country production of refined indium since 1989; these data indicate that global indium production is dominated by Japan, Korea and China, who produced 9, 19 and 53% of 2013 global production, respectively (USGS 1989–2014). China produces approximately one-quarter of global lead and one-third of global zinc production (BREE 2013), indicating that Chinese indium production is consistent with the makeup of Chinese base-metal production capacity, as well as their considerable manufacturing capacity and demand for electronic goods. Canada, Belgium and Russia are also important producers of indium from mining.



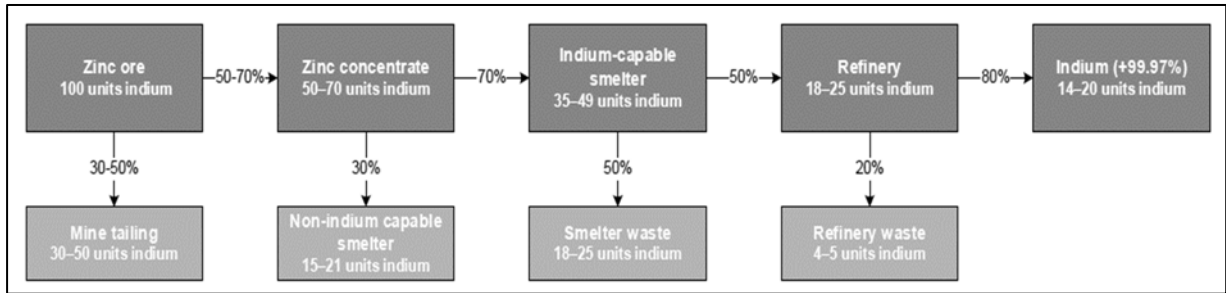
4. figure: Distribution of indium production from mining (1989–2014)

Source: T. T. Werner, G. M. Mudd & S. M. Jowitt, 2015.

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Figure 4 shows the production of refined indium since 1989. “It indicates that in the period examined the global indium production is dominated by Japan, Korea and China with around 9%, 19% and 53% of the global production. China’s position is coming from the fact that it owns one-quarter of global lead and one-third of global zinc production” (BREE 2013).

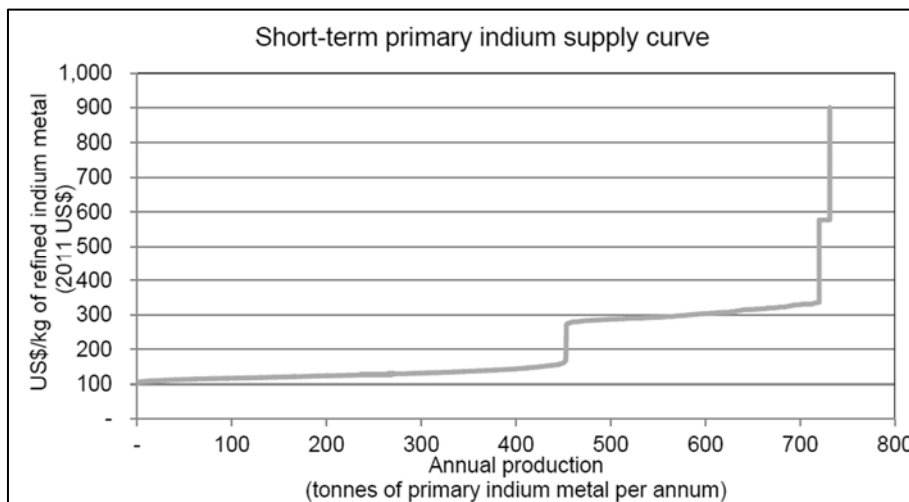
As indium has a quite low economic contribution to zinc and other base metal producers and the metallurgical extraction is difficult, the recovery of metal in its value chain is poor. Not more than 20% of the indium content can be expected during the technological process. It can be expected that growing indium prices can put the metal in focus of the mines, smelters, and refineries.



5. figure: Indium value chain and its recovery efficiency

Source: M. Lokanc, R. Eggert, M. Redlinger, 2015.

During the process for zinc mining and processing around 30-50% of the indium is lost. The technology of smelters are different. Some of them (30%) are non-indium compatible smelters while the others have around 50% efficiency from the point of view of the smelting process. The impure indium is sent for advanced refining where the recovery rate reaches around 80%. M. Lokanc, R. Eggert, and M. Redlinger in 2015. with a Monte Carlo simulation generated a short-term supply curve. They found that a minimum price of \$100/kg can encourage the production of indium. Below that level even from the best deposits indium can’t be recovered economically, They found that prices above or below \$150 and \$300 will significantly change the supply.



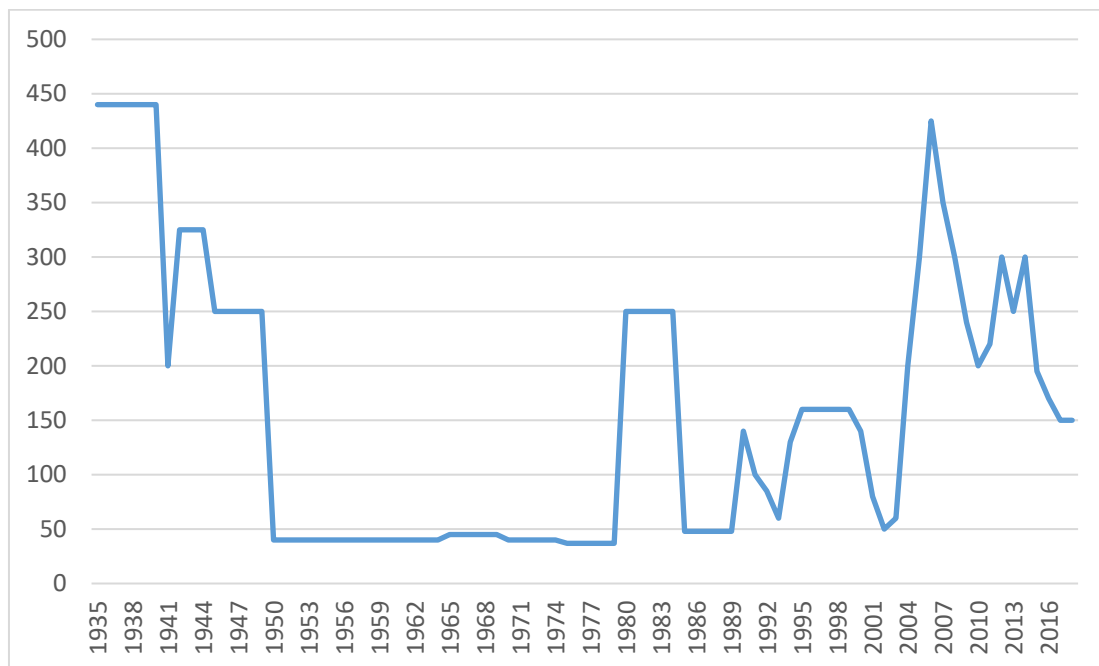
6. figure: Short-term primary indium supply curve

Source: M. Lokanc, R. Eggert, M. Redlinger, 2015.

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For the short term they created three scenarios. The first was scenario calculated with the existing mines given recovery efficiencies. The second assumed that indium-bearing concentrates can be sent to indium-capable smelters with the present recovery rates. The third one assumes that the recovery efficiencies reflect the latest technologies.

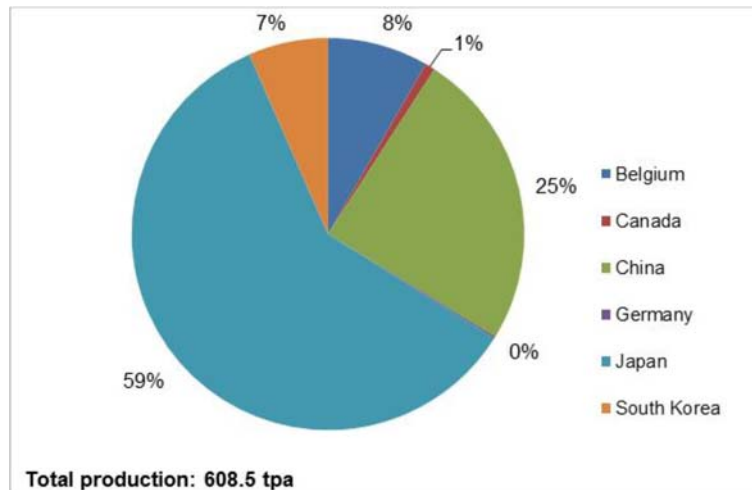
Before 1996, recycling was not a significant source of supply prices were around \$125-\$200/kg. Increased demand caused prices to increase significantly in 1995. This helped manufacturers to rationalize their use of indium and avoid indium waste. Thanks to these processes supply increased while demand decreased so prices reduced. In the medium term if indium prices higher than \$300-\$400/kg this helps to find new production capacities. Recycling became profitable when prices higher than about \$175/kg.



7. figure: Price of indium in USD

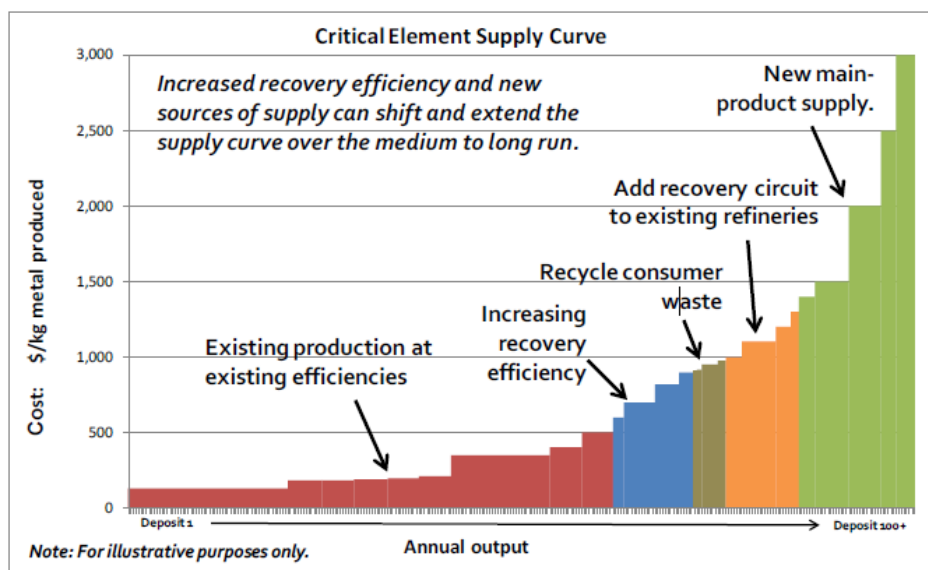
Source: own compilation based on Kaiser Research, 2015.

In the Second World War indium was used for coating bearings in high-performance aircraft engines. After the war this application became unpopular so the demand decreased dramatically which led to very low prices. Between the fifties and eighties the main but very minor use was the element as the emitters and collectors of PNP alloy-junction transistors. The supply and demand was stable and they resulted an almost unchanging price in that time. In the 1980s the industry started to use for liquid-crystal displays (LCD) which became the mainstream technology by the beginning of the 2000s. Demand increased dramatically while supply wasn't able to follow the needs. Around 2005 recycling technology started to develop the effectiveness of the indium use become better (less indium needed per unit). All these resulted mainly decreasing price trends till today.



8. figure: Geographical breakdown of recycled refined indium
Source: Roskill, 2010

The secondary indium production was around 610 tonnes in 2010. The geographic breakdown of the secondary production is located in countries where most LCD manufacturing takes place (Japan, China, and South Korea). For the 610 tonnes of refined indium 938 tonnes of indium entered in the recycling process and around 330 tonnes are lost (Roskill, 2010).



9. figure: Illustrative medium-term indium supply curve
Source: M. Lokanc, R. Eggert, M. Redlinger, 2015.

In the medium term indium supply can have several additional sources. The first source can be come from the increased recovery efficiency. Second some operations can be changed that currently do not recover indium with new technologies. The recovery of indium from zinc or from other mines can be started. An increased secondary production recycled materials is expected in the future from consumers and manufacturing waste. Appearance of new indium focused producers (M. Lokanc, R. Eggert, M. Redlinger, 2015).

4. SUMMARY

Indium is an important element of the modern IT industry today. Its production is concentrated mainly to a few Asian countries. In the case of the US it is really critical as the country owns only around 1% of the world overall reserves. The demand of the metal has a predicted moderate growth in the near future which is served by the growing efficiency of the smelting and refining processes. In the case of growing demand because of possible new applications higher prices especially above 300USD can dramatically increase supply volume as it became profitable for many possible producers. Some researchers suggest to open mines which focus on indium. As the overall size of the indium market can't be more than 100-200 million USD per year and one indium focused mine needs hundreds of millions of investment we don't think that it is a real option in the near future at current prices.

KÖSZÖNETNYILVÁNÍTÁS

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POSSIBILITY TO USE STATISTICAL TOOLBAR TO ANALYZE HEAT SUPPLIERS¹

Gábor Béla, Süveges

Master instructor, Faculty of Economics, University of Miskolc
3515 Miskolc, Egyetemváros; 0646 565111-1329
suveges.gabor@uni-miskolc.hu

SUMMARY

Traditional financial accounting indicators provide a good basis for pecuniary, financial and profitability analyses of an industrial sector or a group of companies. These indicators are considered statistical ratios. The study takes account of statistical tools usable for economic analysis, with special regard to statistical series, tables and ratios. In addition to review tools for statistical analysis, it provides examples of how they can be used in the case of heat suppliers. Its methodology is literature analysis and the result is a flow chart that links statistical methods to the process of analyzing heat providers.

1. INTRODUCTION, METHODOLOGY

Statistics deal with "the scientific methods of collecting, organizing, aggregating and analyzing data, with drawing the correct conclusions from the analysis and with making rational decisions based on them" (Murray, 1995, p.1). Several fields of statistical methodology can be distinguished. One of the basic grouping criteria is its purpose, i.e. the use of the data:

- descriptive or deductive statistics that focuses on data collection, grouping and calculating simple indicators (Domán, Szilágyi and Varga 2009). It, however, does not exceed observation and description, nor is it intended to draw conclusions. The tools of descriptive statistics are suitable for describing basic corporate management characteristics (Kerékgyártó, L. Balogh, Sugár and Szarvas, 2008).
- Inferential or inductive statistics, which goes beyond observing phenomena by describing them with numbers. Its tools provide opportunity to make general statements about the whole population (Murray, 1995). Some authors draw attention to the distinction between two types of inductive statistical activity:
 - o exploratory statistics focusing on the regularities in the basic data, especially concentrating on exploring "peculiarities", while
 - o the confirmatory (proof) statistics aims at testing certain pre-defined assumptions and hypotheses (Vita, 2000).

The purpose of this study is to review the statistical methods which can be used for economic analyses. The study is important because its author's research field is the analysis of the companies providing heat supply in Hungary, which requires the knowledge of the necessary methods. In addition to describing statistical analytical tools, the study provides examples of how they can be used for heat suppliers. Its methodology is literature analysis and the result is a flow chart that links statistical methods to the process of analyzing heat providers.

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2. LITERATURE REVIEW

In order to carry out the appropriate analysis and to get to know the population, it is necessary to group, classify and systematize the data, obtained from companies, from different aspects. Grouping refers to the division of a population based on criterion (criteria) that distinguish the units of the population (Domán, Szilágyi and Varga, 2009). We are right when we create groups taking into account the “MECE Principle²”. According to the different criteria, as a result of grouping, the available information can be grouped into statistical series and statistical tables. Statistical series refer to a set of statistical data organized by some aspect (Galó, 2002).

The following table lists the types of statistical series:

Table 1: Types of statistical series

Type of data	Type of series	
Derived from the same kind of data (comparative or grouping series)	Qualitative series	
	Quantitative series	
	Time series	Stock series
		Flow series
	Territorial series	
Derived from different kind of data (Descriptive series)		

Source: own edition based on Domán, Szilágyi and Varga, 2009

Qualitative series provide insight into the composition and structure of the population that help getting to know the composition and the structure of the main population by sub-populations and are used especially when the population items need to be organized based on some non-quantifiable characteristic or the versions of the qualitative series can also be listed to make comparisons (Köves, 1975).

In my research, qualitative series are suitable for describing the way in which heat suppliers operate - either independently (heat supply and related activities such as heat production or electricity production) or as part of an urban public utility supplier or asset management.

Quantitative series are appropriate to describe the distribution of the population items based on some quantifiable criteria (Szép, 2002). Quantitative series always include two series of numbers, one of which expresses different versions of the quantitative series. By ranking the available data in a monotone order based on the examined quantitative series, a ranking list is created, from which, for reasons of clarity, classes are formed that will refer to the subsets of the possible values of the quantitative series³(Tóth, 1996). Continuous quantitative criteria can take any value within given limits, while values of the discrete criteria can only be isolated numbers (Köves, 1975). In the case of district heating companies, quantitative series are found, among others, in the amount of heat sold, which can be found in the statistics published by the Association of Hungarian District Heating Enterprises. In my primary research, I accept the intervals created by the Association. Since the grouping criterion remains unchanged from year to year in this case, the classification system does not change in the regular statistical

²The name "MECE principle" is made up of the initials of the English words Mutually – exclusive -and - collectively - exhaustive. The principle refers to the creation of homogeneous and mutually exclusive groups or classes that ensures the coverage of the whole population so that each unit can be clearly and exclusively classified into one of the classes (Lee, Chen, 2018).

³The use of the "MECE principle" described above is a requirement when designing class intervals.

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publication. Moreover, it can be considered as a quasi-nomenclature familiar for the actors of the industrial sector.

Territorial series are obtained by sorting statistical data by territorial criterion. Territorial series provide opportunity to group the items of the population by territorial, geographical or administrative units. It is important because social phenomena and processes take place in different geographical locations on the one hand (Szép, 2002) and there can be considerable differences within a country in the income or in other conditions of the population, which affects their ability to pay and thus affects corporate debt on the other. In the empirical research, I would like to examine whether spatial information proves to be a grouping criterion and whether the county or the region of the country in which the company can be found has an effect on the liquidity and profitability.

Time *series* make statistical comparisons possible by highlighting the changes of the examined phenomena in terms of time and location. *Stock series*“ list the results of data collection realized at different times and link data from stock populations. The data of *flow series* show a process over a period of time by *linking the* data from flow populations to each other” (Domán, Szilágyi and Varga, 2009, p.27). The analysis of changes over time (like legislative changes over a given period of time) and their effects play a key role in my primary research therefore I will also analyze time series⁴.

Descriptive series are lists of different types of data that all refer to the same phenomenon or unit. Some authors do not consider descriptive series to be "real" statistical series, but the "characterization of the observation unit by various criteria" (Vita, 2008, p.47). Even if they are not considered "real" statistical series, description series can still be meaningful because the fact that all data refer to the same phenomenon implies that it can provide information to the analyst giving the opportunity to reveal the relationship between data of the descriptive series therefore contributing to further analysis thereby contributing to reveal causal relationships. In the case of district heating companies, the technical and economic data provided yearly by the companies according to Annex 4 of the Government Decree no. 157/2005 (August 15) on the implementation of the Act XVIII of 2005 on district heating services are considered descriptive series.

The coherent framework of statistical series is called *statistical tables*, which are considered as tools for processing, analyzing, publishing and illustrating statistical data (Domán, Szilágyi and Varga, 2009). From grouping point of view, the following three types are distinguished:

- simple tables which do not contain grouping series and total cells,
- grouping tables which include grouping but not combined classification, and grouping by one criterion is linked with some comparison or descriptive series in the two dimensional tables,
- combination tables, where another classification is realized within the groups created by some criterion therefore they contain combined classification (Köves, 1975).

From functional point of view, the following three types of statistical tables can be distinguished:

- processor tables, which are compiled during data processing,
- presentation tables summarizing the final results of the work,
- work tables that contribute to further calculations.⁵

⁴Although the results of time series analysis can also be used for forecasting purposes, the purpose of my research is not to anticipate the revealed regularities in the future therefore I did not aim to present the possibilities of time series extrapolation.

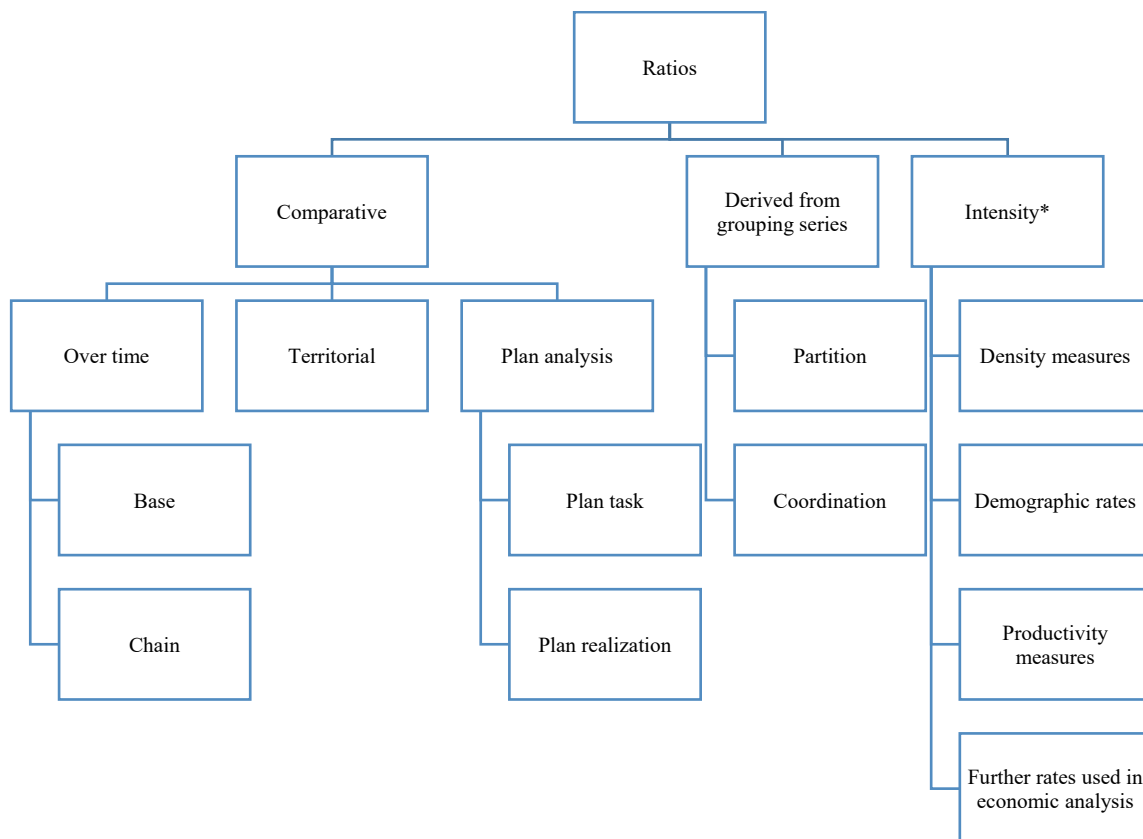
⁵ All three types of tables are used in my further research.

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In the course of the analysis, statistical series are used connected to each other in the form of statistical tables. Created in a well-structured and transparent way, these tables provide a great help in comparing the data, which are the basis for revealing facts and rules. Besides grouping, *comparison* also plays an important role, which can be realized by calculating the difference or the ratio of two statistical data that is, using absolute numbers and ratios:

- *Absolute indices* are considered starting point for the analysis since they can only be used for presenting the scale on their own. They can be used for examination when we place them next to each other in some aspect, which may lead to the presentation of not only the magnitude but also of the changes in stock values (Béhm, Bárczi and Zéman, 2016). Some of them can also be found directly in the annual reports.
- *Ratios* are "rates of two logically related data" (Gáabrielné, 2002, p.67) which belong to the same statistical series. Using ratios provides more information than analyzing absolute indices.

There are several ways to group ratios, one of which is shown in the following figure:



* Typical types

Figure 1: Grouping ratios

Source: own edition based on Domán, Szilágyi and Varga, 2009. p.42.

Three types of ratios can be calculated from homogeneous data:

- Calculated from grouping series,
 - o *partition ratios* express the structure of the phenomena and the internal ratios by comparing the frequency of the subpopulations to the sum of the frequencies, that is, the partial data to the whole (Kerékgyártó, L. Balogh, Sugár and Szarvas, 2008),

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○ *coordination ratios* are calculated by comparing a partial data of a grouping series to another partial data (Köves, 1975). Comparison over time or in space provides ratios describing the internal structure and the changes or differences of phenomena.

- *Comparative ratios* calculated from comparative series provide information about “how many times or what percentage of the data, different in time or in space, of the examined phenomenon makes up of the selected data” (Doman, Szilagyi and Varga, 2009, p.44).

These ratios include:

○ *dynamic ratios*, which, calculated from the rate of data from two time periods or date and the data of the current or base period, provide information about the data and of the underlying economic content as a base or chain ratio.

○ *territorial comparative ratios*, defined as the rate of data for two regions.

○ *plan analyst / plan realization ratios*, which help assess and check whether a company efficiently manages its resources and whether it has reasonably assessed its potential and potential limitations. The selected benchmark is a past actual performance in the case of a plan task ratio and an expected performance in the case of a plan realization ratio (Gáabrielné, 2002).

Intensity indicators can be formed from different types of (heterogeneous) data. They express the rate or the relationship of data derived from two different but related phenomena. Their most common types are:

- *density indicators*, like population density

- *demographic ratios*, like birth rate

- *productivity indicators*, like quantity of heat sold per unit of district heating pipeline

- other ratios *applicable to economic analyzes* of certain companies or industrial sector.

When constructing and calculating the intensity ratios, one must actively rely on the methodology of inferential statistics, since it is necessary to decide which data (numerator) is compared and which data is the base of the comparison (denominator) by taking into account the appropriate logical procedures and knowledge of economic relations.

I consider the following ratios to be relevant to the purpose of my research:

- Comparative over time and territorial comparative

- Partition and coordination

- Intensity ratios adjusted to industry specificities or to the examined group of companies.

In the next part of the literature review, the potential role of the ratios is examined in accounting analysis.

4. CONCLUSIONS, FUTURE RESEARCH FIELDS

A wide variety of indicators can be used to measure financial performance, for which simpler and more sophisticated statistical methods prove to be excellent tools (Béhm, Bárczi and Zéman, 2016; Szemán and Bozsik, 2005). The steps of the analysis process are well illustrated in the following figure, which I have updated for my research process:

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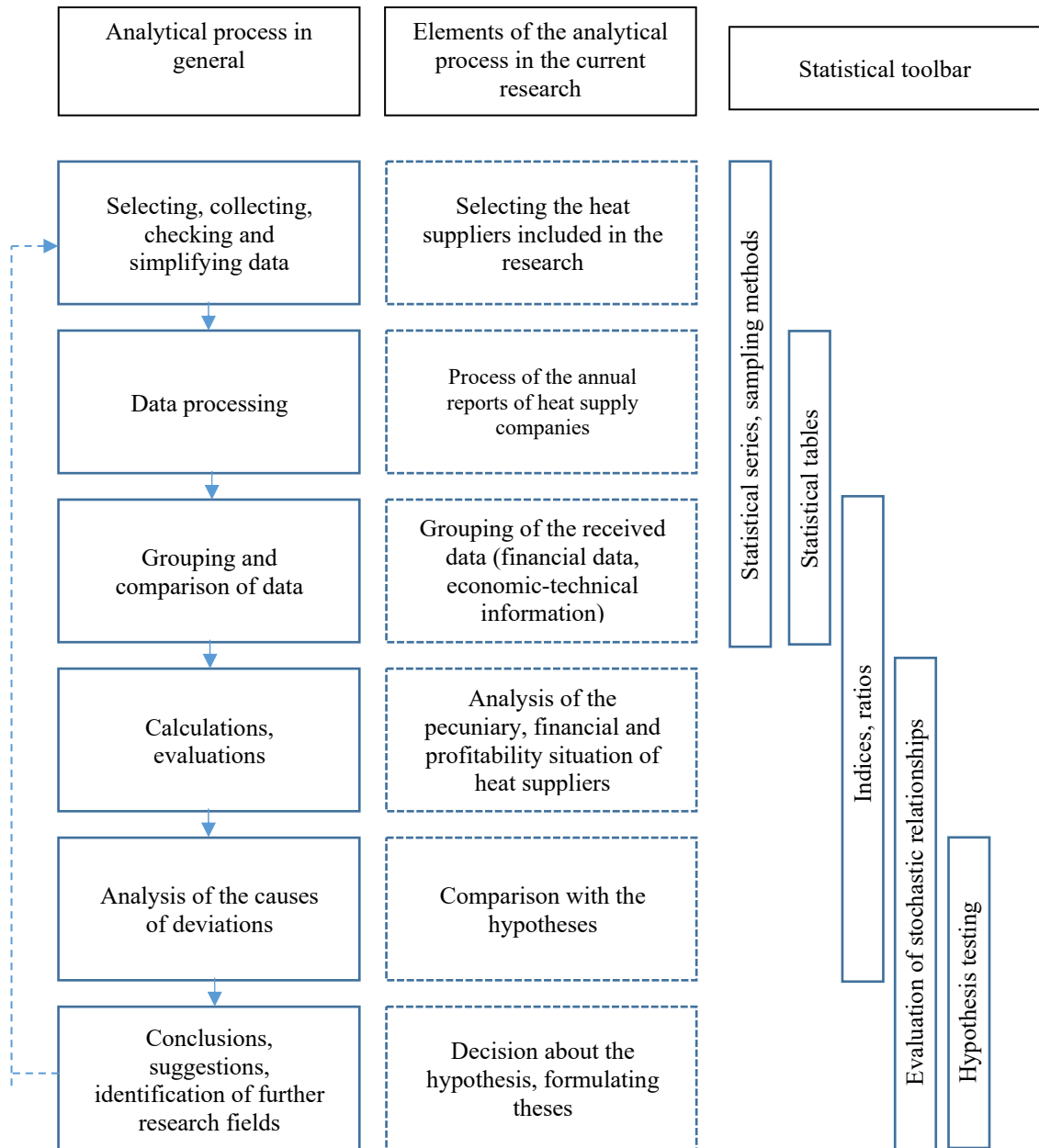


Figure 2: General and specific steps of the analysis process and the statistical toolbar required for its application
 Source: Own editing

Following the reasoning of Béhm, Bárczi and Zéman (2016) that "some basic statistical indicators and statistical methods can be used to measure financial performance and serve as a basis of forming financial ratios" (Béhm, Bárczi and Zeman, 2016 p. 27), statistical ratios are considered suitable for presenting and analyzing the pecuniary, financial and profitability situation of heat suppliers.

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THE ROLE OF NON-PROFIT ORGANIZATIONS IN IMPLEMENTING SOCIAL INNOVATION IN THE COUNTRIES OF THE VISEGRAD FOUR

Rita, Szabó

Ph.D. student, University of Miskolc, Faculty of Economics, Institute of Management Sciences

3515 Miskolc-Egyetemváros
szvrita@uni-miskolc.hu

SUMMARY

Social innovation is still a relatively new concept in the Visegrad Four countries. Even though it has received increasing attention from the scientific community, little is known about it. Market players, public institutions, civic, non-profit organizations, social enterprises, and private initiatives can be the drivers of innovation. Most researchers agree that effective and genuine change in social innovation can be achieved through cooperation between different sectors and actors. Hereafter, I will investigate the role of the non-profit sector in the process of social innovation in the countries of Visegrad Four.

1. ABOUT SOCIAL INNOVATION

Social innovation is a relatively new concept and, as such, does not have a generally accepted definition. In my opinion, it is important to know the best approaches to understand its significance. Social innovation, in short, is a novel program, method, or solution that addresses existing and unmet social problems. It is important to note that the purpose of social innovation is to strengthen community relations, increase social participation and achieve social change. In the words of the European Commission, 'the process of social innovation aims to develop and implement new ideas, products, services or models that meet societal needs while creating new social relationships and partnerships. The purpose of social innovation is to improve human well-being through innovations. These are innovations that not only benefit society as a whole but also stimulate individual participation. These innovations rely on the ingenuity of citizens, civil society organizations, local communities, the private sector, and public services.' (European Commission, 2013, p. 6)

Social innovation, in my view, can have a wide range of actors under optimal conditions, and the challenge is to identify them. Its actors and drivers can be, for example, market players, public institutions, NGOs, non-profit organizations, social enterprises, private initiatives. Most agree with the view that the most effective and real social change can be achieved through cooperation between different sectors and actors.

2. NON-PROFIT ORGANIZATIONS AS PARTICIPANTS IN SOCIAL INNOVATION

There may be many actors in the field of social innovation, but in this study, I focus on the Hungarian and European non-profit, or so-called *third sector*. The third sector designation indicates that nonprofit organizations form an independent sector in the national economy alongside the state and the market. They are very heterogeneous in organizational forms, and

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their names vary from country to country. The use of the term "non-profit" is generally non-uniform across Europe and the world and can sometimes mislead an untrained reader. NGOs, or Non-Governmental Organizations, or CSOs are often called Civil Society Organizations. In addition, we also meet the term NPO, Non-Profit Organization. In the European Union's practice, CSO is the more common term which means, Civil Society Organizations. In Hungary the name civil or non-profit is widespread.

Despite the differences in definition and the various organizational forms, these organizations have several common features, most notably their "mission-driven" nature. This mission leadership can be seen in embracing some social, environmental problems or causes. The main purpose of the nonprofit or third sector is the same as the main motivation of social innovation, so in my opinion, they should be given priority in the process and research of social innovation. The framework of the definition and conceptual framework of the European third sector can be seen in the overview of Solomon and Sokolowski (Figure 1). Within this framework, the third sector encompasses individual and organizational activities along three major philosophical lines:

- private, independence from government;
- a public purpose to serve a wider community;
- the voluntary nature of the activities. (Solomon, Sokolowski, 2016)

The institutions in the model are characterized by five main organizational characteristics:

- a certain level of institutionalization
- prohibition of profit sharing
- self-government and organizational separation from the state
- free choice in the activities of the organizations
- private, not controlled by the government

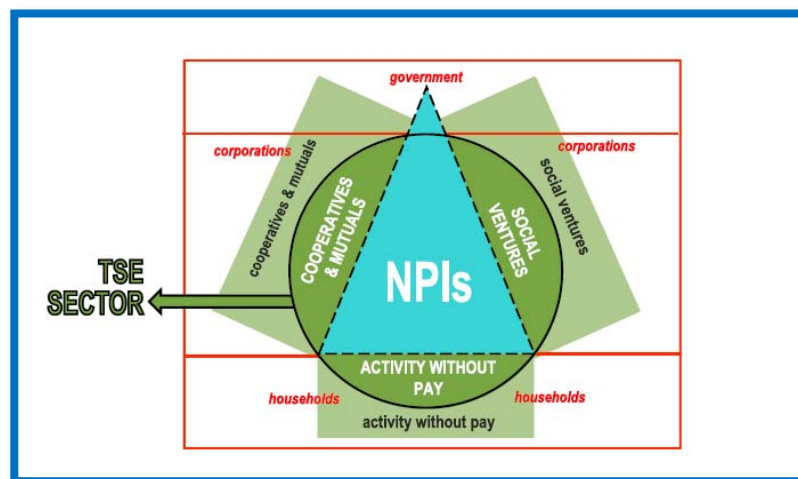


Figure 1. The European Third Sector Framework (Solomon, Sokolowski, 2016)

In my opinion, this theoretical framework is an effective representation of the European third sector and thus suitable for presenting the Hungarian non-profit sector. As it is clear from the framework, there is a market sector between government and households, which is interspersed with the Third Sector in Europe (TSE) and the Nonprofit Institutions (NPIs). The third sector can be found in the voluntary participation of households, while the market sector is embodied in social enterprises and cooperatives. There is a common set of non-profit organizations with the government sector, which may be public foundations or non-profit economic enterprises in the Hungarian context.

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These so-called mission-driven organizations have the goal of embracing a community cause or solving a problem just like social innovation. It is this interface that gives us a better understanding and analysis of the third sector and its organizations. Behind the theoretical frameworks, in the following, I briefly present the non-profit sector of the Visegrad Four countries and analyze their social innovation projects.

3. NON-PROFIT SECTOR IN THE VISEGRAD FOUR COUNTRIES

The Visegrad Four countries include Hungary, the Czech Republic, Poland, and Slovakia. This historical connection dates back almost 700 years, but the actual cooperation began in 1991. The Visegrad Group, or V4 regional grouping, is an official form of partnership. In this study, I chose these four countries as an example to examine the state of social innovation projects. Are there similarities in this field or not? Does the common past provide a common characteristic? Let's first meet the non-profit sector in these countries.

3.1. About the method

The source of the data is partly a recent monitoring study of 2019 and partly an other one from 2017 about the civil sector in Central and Eastern European countries. To present the non-profit sector of these countries, I have taken over the statistical and estimated data. Unfortunately, only partial, mainly estimated data are available for Poland, so the comparative analysis doesn't contain it. The source of the projects in the V4 countries is the online Social Innovation Atlas, an international research platform for European Union-funded research on social innovation. The platform provides a comprehensive overview of the diversity of social innovation through more than 1,000 projects worldwide.

3.2. The Non-profit sector of the Visegrad Four

The civil sector in the Visegrad countries is very strong, especially in an economic view. Hungary's third sector is slightly smaller than in Central European countries if we look at the active organizations per population. However, it is still outstanding compared to our eastern and southern neighbors. While in Hungary there is an average of 6 NGOs per 1000 inhabitants, in Bulgaria, Romania or Bosnia this number ranges from 2 to 4 organizations. The number of active non-governmental organizations in Hungary is slightly over 61 thousand. In Poland, according to some sources, the number of NGOs is between 110 and 130 thousand, but we do not know the exact figures. There are approximately 46,000 organizations in Slovakia and over 73,000 in the Czech Republic.

It is also clear from Figure 2. that sport and leisure activities were considered to be the most developed areas in the non-profit sector in the three countries examined. Also, social services and educational activities, as well as culture, are strong in Slovakia. While in the Czech Republic, professional organizations and the cultural sector complement the picture.

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	Hungary	Slovakia	Czech Republic
Population	9,778,371 (2018) (KSH, 2018a)	5,443,120 (Statistical Office of the Slovak Republic, 2017)	10,637,794 (CZSO, 2018a)
EU membership status	member country (since 2004)	member country (since 2004)	member country (since 2004)
GDP per capita	17,300 USD (IMF, 2019)	20,160 USD (IMF, 2019)	23,210 USD (IMF, 2019)
Number of CSOs	85,167 (2017) (KSH, 2018c)	15,630 (Statistical Office of the Slovak Republic, 2017)	133,842 (CZSO, 2018b)
Number of active CSOs	61,151 (2017) (KSH, 2019a)	approx. 46,000 (estimation)	73,842 (estimate)
Number of active CSOs/1000 citizens	6.3 (KSH, 2018a; KSH, 2019a)	approx. 8.45 (estimation)	6.94 (estimate)
Most developed fields of activity	sports and recreation (KSH, 2019a)	social services; education; sports and recreation; culture (Statistical Office of the Slovak Republic, 2017)	culture; sports and leisure; professional associations (CZSO, 2018b)
Population share engaging in volunteering	26.1% (2014) (KSH, 2016)	4.42% (Statistical Office of the Slovak Republic, 2017)	2.14% (CZSO, 2018c)

Figure 1. Statistics about Hungary, Slovakia and the Czech Republic, Eva M-H. et al. (2019)

An important indicator for the third sector is the degree of volunteering. In this respect, Hungary is at the forefront of its Visegrád counterparts, because about a quarter of the population is involved in some way in voluntary activities. This proportion in Slovakia is only 4, 42%, while in the Czech Republic 2, 14%.

4. SOCIAL INNOVATION IN CENTRAL EUROPEAN COUNTRIES

Social innovation is less widespread in these countries. Although innovation policies are not necessarily aimed at the development of social innovation, many initiatives show the potential and positive benefits of this type of innovation. Numerous projects and programs implemented across Europe are proving this. In the countries of Central Europe, innovation performance is still below the EU average, but the region's future prospects are very optimistic. *“Eastern Europe has the potential and ability to contribute to a better future by developing innovations that respond to certain challenges, such as poverty reduction, achieving social cohesion and addressing environmental issues”*. (Howaldt, J., et al., P. 116)

Thus, social innovation is still relatively new and unknown in this region. This is mainly because social innovation in these countries is largely the result of the work of the third sector and social entrepreneurs. As such, it is mainly a result of pressing social issues that are not addressed by public policy. Social innovation should play an important role in these countries in the future, including developing the social economy and mobilizing volunteers for social issues. (Howaldt, J. et al., 2018)

4.1. Social innovation projects

I inspected the four Visegrad countries from the available online interface and examined their implemented social innovation projects. I present 4 projects in Hungary, 3 in Slovakia, 9 in Poland and 3 in the Czech Republic. The main working fields of the 19 projects are illustrated in Figure 3. Most of them are in the field of education (8 projects), and the dominance of this area is observed in all four countries. There are 5 social innovation programs in the field of environmental protection and energy awareness, and in all member states except Hungary, have such initiatives. The remaining 3-3 projects are social and employment initiatives.

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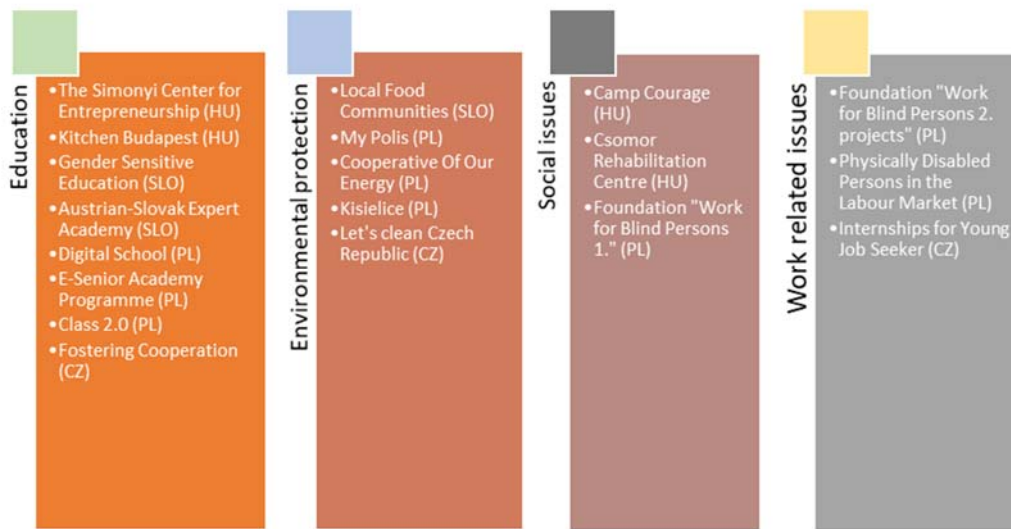


Figure 3. Social innovation projects in V4 countries, Source: www.socialinnovationatlas.net., own edited

In four cases the host of the three Hungarian projects is a non-governmental organization and a university initiative. In the Czech Republic and Slovakia, two of the 3-3 projects are state-run and one is NGO. There are 9 social innovation programs in Poland, 6 in non-profit organizations, 1 in economic operators and 1 in state-run projects. The remaining 1 cases, the maintainer could be state-market cooperation.

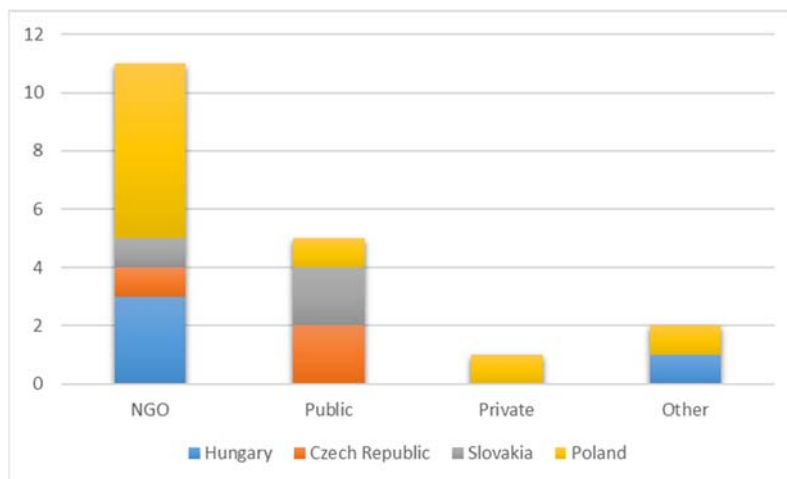


Figure 4 Managers of social innovation projects, Source: Own edited

Even though a project is being implemented by a foundation or nonprofit, in many cases other partners or founders are behind the scene. The KITCHEN Budapest project, for example, operates as a Nonprofit Business Company - and as such is a nonprofit organization - but defines itself as T-Systems Hungary's open innovation lab. In other words, the form a project operates is not yet obvious to us. That is why I also examined the partners for the projects where this information was available.

17 of the 19 projects involved partner sectors, and a total of 27 partners - minimum one, maximum three - were listed. Thus, in 7 cases NGOs, in 8 cases business organizations, in 9

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cases public sector, in 2 cases science, research institutions and in 1 case other organizations were designated as partners.

Based on all this, I believe that the social innovation projects examined here are able to cross traditional sectoral boundaries. The importance of non-profit or non-governmental organizations is not insignificant, as most of the projects (11 out of 19) are implemented by third sector organizations. In my view, there may be several reasons for this. Just think that non-governmental organizations are embedded in the fabric of society, are fundamentally grassroots initiatives, and as such, social, community issues are quickly recognized by them. Therefore, they can carry out innovation projects easily (without strict constraints) and effectively.

4.2 Four countries, four projects

The brief description of social innovation projects of the four Visegrad countries is presented below.

Camp Courage, Bátor Tábor, Hungary, *Social Area*

Launched in 2001, the Bátor Tábor Foundation, which is widely known in Hungary, deals with the therapeutic recreation of children living with cancer or other chronic illnesses. Free camps are open not only to children but also to families who have lost their child as a result of a serious illness.

Gender-Sensitive Education, Slovakia, *Education*

The project focuses on eliminating gender stereotypes and promoting gender equality. This project, which has been running since 2000, pays particular attention to mainstreaming equality and diversity in lifelong learning and education policies.

Work for blind persons, Poland, *Work related issues*

The NGO aims to improve the situation and social rehabilitation of the disabled in Poland. To this end, it helps people who are visually impaired (and disabled) to enter the world of work.

Let's Clean the Czech Republic, Czech Republic, *Environmental protection*

Let's Clean the Czech Republic is an innovative project that mobilizes volunteers of all ages and backgrounds to identify and eliminate illegal landfills nationwide. The project aims to raise awareness of society and to develop ecological and social responsibility.

5. CONCLUSION

The field of social innovation is indeed fluid and diverse, but its significance is unquestionable. In our modern age, we face social challenges as much as a century ago, but we can see social innovation as an opportunity to make a real difference. There are many areas of activity where they can be effectively applied and the scope of each project is wide. It is also clear from the examples above that their activities are generally directed not only at a limited target group but also have a broad impact on our society.

Finally, from the above, the role of the non-profit sector in social innovation projects, whether they are implementing organizations or partners, is very important. The sector undoubtedly plays a key role in the development and dissemination of social innovation activities. Their existence and core activity provide a framework for effective innovation projects. This can also be traced back to their social embeddedness and mission lead work. As they are a grassroots organization that recognizes and responds easily to the problems of their environment. However, the effectiveness of social innovation projects can certainly be increased through cross-sectoral cooperation. Instead of the traditional three-sector mindset, there is a need to involve citizens and academia, as they can bring about real societal change together.

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**ANALYSIS OF THE MARKET OF LANGUAGE SCHOOLS IN
NYÍREGYHÁZA AND THE SURROUNDING REGION**

Szilvia, Szabó

PhD student, Miskolc University, Faculty of Economic Science
Marketing and Tourism Institute

ÖSSZEFOGLALÁS

Napjaink felgyorsult világában a nyelvoktatásban is egyre nagyobb teret hódít az internet adta online képzési lehetőség. Az online nyelvoktatást, mint módszert a modern kor kihívásai hívták életre. Az élethosszig tartó tanulás megköveteli a munka mellett végzett tanulást, mely körülményeit tekintve csakis valamely rugalmas oktatási formában valósítható meg. Ez az elv legjobban az online nyelvoktatás segítségével valósítható meg. Egyre több nyelviskola vezetője felismerte, hogy az online nyelvoktatás, mint szolgáltatás versenyző lehet, mert a tanulók számára rugalmasságot és kényelmet biztosít. Könnyű belátni, hogy az idő előrehaladtával, a tudomány rohamos fejlődésével, valamint a tanítási formák és módszerek közötti verseny fokozódásával a nyelvoktatási piac is átalakul.

A tanulmány STEEPLÉ elemzés alkalmazásával mutatja be a nyelviskolák piacára ható legfontosabb környezeti tényezőket és a Porter-féle 5 erő modell segítségével tárja fel az online nyelvoktatás piacát befolyásoló erőket Nyíregyházán és térségében, azért, hogy meghatározza a piacon maradáshoz, illetve a lehetséges piaci előny megszerzéséhez szükséges stratégiai lépéseket. Kutatási eredményeim alapján kijelenthető, hogy a jelenlegi, de különösen a jövőbeli üzleti siker kulcsa a nyelvoktatás digitalizációja. Ez a legfontosabb trend és a legerősebb befolyásoló tényező a nyelviskolák által vizsgált piacon, különösen a fiatalok körében.

Kulcsszavak: online nyelvoktatás, e-learning, STEEPLÉ, Porter-féle 5 erő modell

SUMMARY

In our fast-moving world online learning options are increasingly gaining ground in language teaching. Online language teaching as a method was brought to life in response to the challenges of the modern age. Lifelong learning requires learning alongside work, which, due to its special character, can only take place in a flexible form of education. This principle can be most readily put into practice with the help of online language teaching. More and more language school managers have realised that online language teaching as a service can be a competition tool because it offers flexibility and convenience for students. It is easy to apprehend that the elapse of time, the rapid development of sciences and the intensifying competition between forms and methods of teaching are also transforming the language teaching market.

The study uses a STEEPLÉ analysis to present the key environmental factors affecting the market of language schools, and it applies Porter's 5 forces model to explore the forces that have impact on the online language teaching market in Nyíregyháza and its surrounding region. Its purpose is to define the strategic steps required to stay on the market and to acquire possible comparative advantages. Based on my research results it can be stated that the key to the present but particularly to the future business success is digitalisation of language teaching. This is the most significant trend and the strongest impact factor on the market of language schools that I have investigated, especially among young people.

Keywords: online language teaching, e-learning, STEEPLÉ, Porter's 5 forces model

1. INTRODUCTION

It seems that in Hungary a lot of people find it difficult to make themselves study a foreign language. „According to the survey of Eurostat, the statistical office of the European Union, barely 6.3% of secondary school pupils study two or more foreign languages currently in Hungary. Luxembourg is on top of the list, where 100% of secondary school pupils learn two or more foreign languages” (*Eurostat, 2017*). The analysis shows that the most popular foreign language is English, which is chosen by most pupils in every EU member state. EU statistics point out that Hungarian pupils choose mainly English or German for language learning purposes. “Three quarters of adults aged 25 – 64 do not speak any foreign languages. This is by far the worst result in Europe, even half the Portuguese population, who precedes us, speak one foreign language. In the area of language knowledge Norway is on the top with three quarters of the adult population speaking at least two foreign languages” (*Fehérvári, 2009*). Several people give as reasons the lack of time and suitable language schools. The possibility of online language learning can remove these barriers, by enhancing Hungarians’ language learning willingness to some extent. Digital technology offers an easy opportunity to explore in everyday life in the area of mobile communication. As masses of people have mobile phones, it significantly affects basic types of human activities in various scenes and situations of life (*Nagy, 2017*). “If it is used during teaching, it arouses students’ interest, engages them, because this system is interactive and gives room for creativity. Stepping out of the framework of formal education, it can be found in a wider context and age group that digital technology expands learning opportunities and changes teaching methods.” (*Fehérvári, 2009*).

2. LITERATURE REVIEW

2.1. Traditional language learning and digital language learning

Previously any language teaching method that included computers was rather limited, since the available technical devices did not allow their versatile implementation. Now, surrounded by computing devices and interactive computer networks, there are a lot of opportunities that are worth exploring for the benefit of language learning. We should think of Section 23 (3) a)-b) of Government Decree No. 423/2012 (XII. 29.), pursuant to which from 2020 those applicants may be admitted to basic and undivided higher educational training – in addition to other conditions set out in law – who have passed at least one B2 level, general purpose, complex language exam or have obtained an equivalent certificate, or have passed at least one advanced level school-leaving exam or have a certificate proving a higher educational qualification. A new opportunity: since 1st January 2018 it has been possible to claim back the price of the language exam and the advanced level school-leaving exam subject to certain conditions as set out in Government Decree No. 1516/2017 (VIII. 14.). Obviously, these government decrees suggest to secondary school pupils and language learners alike that acquiring language knowledge is a vital element of their life.

2.2. Advantages of online language teaching

This type of learning method enables learners/users to study the learning material *at their own pace*, which means that a learner may spend more time on completing certain tasks, and less time on other tasks. This decision entirely depends on the learners, they *do not need to adapt to anybody*. There may be several reasons why language learners choose online learning. Online platforms are accessible anywhere at any time. The key issue is only the availability of an

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internet connection. With traditional teaching methods you cannot take the classroom with you if you are on holiday and would like to learn meanwhile. The other great advantage of the online method is that it is cost-efficient, as it costs less than offline language teaching. The online teaching method enables students to minimise their time spent on travelling. The next significant characteristic that justified the appearance and spread of online learning is that by the use of the new technology significantly *larger masses can be involved in this training* than by the use of the traditional methods. This fact, due to the trends emerging in education, can become a major factor in determining which training type can survive on the market. We should not forget about the appearance and spread of modern communication technologies (also in teaching), since without them no one could imagine, what is natural today, the electronic transfer of teaching materials and electronic communication, etc.

A lot of people would like to try an online course, which is just a fraction of the price of offline training. A lot of multimedia teaching materials are available on the internet free of charge or at a low price.

Nowadays numerous online language learning forms can be found on the market, just as Quizlet, Facebook learner groups, blogs, vlogs, forums and etc. Naturally, the question arises, why not everybody chooses the online training form. Evidently, this method also has its disadvantages.

2.3. Disadvantages of online language teaching

It is obvious that personal communication between teacher and student continues to be indispensable in learning because language learners need personal support so that they can achieve measurable results within a specific time. Regarding online courses or learning systems, the major problem is not the lack of control any more but the lack of motivation. The largest drawback of online language learning, according to statistics, is that it is not able to maintain this high-level motivation. I have never met anyone who would have only learnt English by relying on online tools. So speech as human-human communication is by far the most efficient learning form. And it is exactly this kind of communication that is missing from the online form of language learning.

2.4. The concept of e-learning

E-learning has existed for about 15-20 years and it has gradually developed with the worldwide web gaining ground extensively. This type of learning method enables learners/users to study the learning material at their own pace, which means that a learner may spend more time on completing certain tasks, and less time on other tasks. This decision entirely depends on the learners. However, it also provides opportunities for group work. It can be facilitated by moderated forums or communication by chatting. “E-learning technique is a solution to the problem of finding the most suitable learning tool to meet the needs of a specific student and to learn a specific teaching material” (Cohen, 2006). “According to other theories, those learning methods belong to the e-learning category, the purpose of the application of which is to transfer knowledge with the help of electronic devices” (Hutter, 2005).

3. RESEARCH TOOLS AND METHODS

In order to analyse the market of online language learning I first conducted a STEEPLE analysis of the macro environment, which investigates the macro environment of language schools; the trends, processes, changes which influence language schools but language schools cannot influence them. The factors of the analysis are the social, technological, economic,

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environmental, political, legal and educational impacts. The initials of these words make up STEEP. Afterwards I made a Porter's industry analysis, in which I present the factors influencing the competition intensity on the market of language schools located in Nyíregyháza and its region, as well as the suppliers' characteristics. Then I continue with the analysis of the potential new market entrants and the threats of substitution. Finally, in the detailed analysis of customers I examine how big the market of language schools is in Nyíregyháza and in its surrounding region, if there are any segments on this market, and I characterise the segments, then I analyse the customers' market behaviour from the point of view of marketing.

4. RESULTS OF THE RESEARCH

4.1. STEEPLE analysis

In the course of the STEEPLE analysis, out of the social, technological, economic, natural, political, legal and teaching environmental factors, I collected and summarised the relevant factors impacting the market of language schools according to the intensity and direction of the impact (Table 1).

Social factors:

- S1: Decrease in the number of young people between 14 and 18 (the age group where the demand for language exams is concentrated)
- S2: Increasing inclination or force for taking up employment abroad
- S3: English knowledge is an indispensable condition (entrance ticket) for well-paid jobs
- S4: Growth of demand for digital learning (new teaching forms)
- S5: Time becoming more important (no need for travelling when learning online/on Skype)

Technological factors:

- T1: Spread of internet use, growth of the number of internet users (application for courses or exams, online information)
- T2: Spread of digitalisation also in language teaching (online tests and teaching materials)

Economic factors:

- E1: Rise of incomes:
- E2: Rise in the number of multinational companies expecting a good command of English

Environmental factors:

- E1: More and more people find sustainability very important (paperless environment)

Political factors: Currently there is no identifiable political impact on language teaching

Legal factors:

- L1: Section 23 (3) a)-b) of Government Decree No. 423/2012 (XII. 29.), pursuant to which from 2020 at least a B2 level, general purpose, complex language exam (both written and oral) is required for admission to basic training at college/university.
- L2: Since 1st January 2018 it has been possible to claim back the price of the language exam and the advanced level school leaving exam subject to certain conditions as set out in Government Decree No. 1516/2017 (VIII. 14.)
- L3: Extra points are awarded for language exams recognised by the state on application for higher educational training
- L4: Developing multilingualism, i.e. learning two languages simultaneously already at the primary school

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Educational factors:

E1: Spread of digitally supported language teaching

E2: Appearance and spread of blended learning in language learning

Table 1: STEEPLE analysis of the factors affecting the market of language schools in Nyíregyháza and its region, Source: author's own editing

STEEPLE analysis of the macro environment	Direction of impact: positive or negative	Strength of impact 1 - weakest, 5 - strongest)
Social factors		
S1: Decrease in the number of young people between 14 and 18 (the age group where the demand for language exams is concentrated)	negative	3
S2: Increasing inclination or force to work abroad	positive	4
S3: English language knowledge is an indispensable condition (entrance ticket) for well-paid jobs	positive	5
S4: Growth of demand for digital learning (new teaching forms)	positive	4
S5: Time becoming more important (no need for travelling when learning online/on Skype)	positive	5
Technological factors		
T1: Spread of internet use, growth of the number of internet users (application for courses or exams, online information)	positive	5
T2: Spread of digitalisation also in language teaching (online tests and teaching materials)	positive	5
Economic factors		
E1: Rise of incomes	positive	4
E2: Rise in the number of multinational companies expecting a good command of English	positive	4
Environmental factors		
E1: More and more people find sustainability very important (paperless environment)	positive	3
Political factors		
Currently there is no identifiable political impact on language teaching	-	-
Legal factors		
L1: Section 23 (3) a)-b) of Government Decree No. 423/2012 (XII. 29.), pursuant to which from 2020 at least a B2 level, general purpose, complex language exam (both written and oral) is required for admission to basic training at university.	positive	5
L2: Since 1st January 2018 it has been possible to claim back the price of the language exam and the advanced level school leaving exam subject to certain conditions as set out in Government Decree No. 1516/2017 (VIII. 14.)	positive	5
L3: Extra points are awarded for language exams recognised by the state on application for higher educational training	positive	4
L4: Developing multilingualism, i.e. learning two languages simultaneously already at the primary school	positive	1
Educational factors		
E1: Digitally supported language teaching	positive	5
E2: Blended learning in language learning	positive	3

4.2. Porter's industry analysis

Michael Porter developed such a framework system enabling the positioning of companies that estimates the competitive force of market players based on a status judgement as objective as possible (Porter, 1979) Each language school is a rival of any other language school within the industry. If there are many language schools and of nearly the same strength present in the industry, it makes the strengthening of competition in the industry probable. If the growth rate of the industry is low, it is also a strengthening factor, because the individual language schools would like to grow. High course fees may also generate competition as language schools (may) cut down course fees in order to reach more learners.

Intensity of competition

In the course of the analysis I compared nine language schools in Nyíregyháza and its region. Annex I illustrates the price level, discounts, language exam possibilities, target audience and other special services, e.g. online teaching, of the language schools situated in Nyíregyháza and its region. The target audience mostly includes school pupils and university students, adults and companies but small children were also included. Unfortunately, online language teaching, as other special service, is provided in few places, in spite of the fact that the current age points towards online teaching to an increasing extent. The market leading language school must make more and more information public, which helps the language learner make an immediate customer decision against the competitors.

In order to be able to assess the characteristics of language schools with a single indicator, I performed the following operations: (1) I ranked the replies of all the language schools on a scale of 1-5, thus I obtained a total score; (2) I divided this total score by the maximum attainable score (40); (3) I expressed the quotient in a percentage form. In addition, I made nine groups on the basis of the “*results*” achieved by each school: The mean of the result for the whole sample is 57%. The lowest value occurring is 35%, the highest is 70%, see in detail in Annex I. After analysing the relevant factors I consider the competition in the industry intense.

Potential new market entrants

The entering new language schools would certainly like to obtain a market share for themselves, which may have a negative impact on prices and the profitability of the industry. On establishing a language school, high capital requirement may also create an obstacle, taking into account the risks arising and the cost price of resources. Strong reaction by the existing language schools towards the new entrants may create an aggravating circumstance, and it may have a deterrent force. It will take some time for the potential new language schools to recruit high quality language teachers, which is a disadvantage for them compared to the existing language schools. A new entrant should comply with legal regulations, which may also mean a disadvantage in relation to the existing competitors.

The experience of the existing language schools itself is usually not a very strong barrier for entering the market, since a lot of things can be copied and the know-how may be purchased. The experience of the existing pioneer school can be observed by the second school, thereby it may proceed faster.

Having analysed the relevant factors, I consider the danger of the threat posed by potential new market entrants to be of medium level.

Hazards of substitution

The existence of language schools is threatened by the appearance of new substitution products, because students may have fully or partially sponsored opportunities to acquire a foreign

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language. One such substitution product is the two-week language course abroad ensured by the Hungarian Government free of charge for students studying in the 9th and 11th forms of secondary schools.

The other substitution product is the Erasmus+ or the AIESEC program, which constitutes a central part of foreign studies within the framework of which students improve their language skills, become more confident and independent, and they also get first-hand experience of the culture of the host country. Further substitution tools are the free online courses and English language contents that can be found on the internet. Having analysed the relevant factors, I consider the danger of the threat posed by potential new market entrants to be of medium level.

Customers

In Hungary 200 thousand people take part in organised language teaching. According to “Világgazdaság” a Hungarian economic journal, out of the 108 thousand people, applying for language exams in 2017, 70.5 thousand managed to obtain an exam certificate. In 2018 language exams were taken by 26 thousand less than in 2016 (Világgazdaság, 2018). The state would like to see a situation where students obtain the expected language knowledge in the school benches instead of language school courses. Currently, however, due to the deficiencies of public education, language learners need to attend language school courses, thus there is a considerable competition on the market of language schools. The market of language schools in Nyíregyháza and its region is almost saturated. Language learners are faced with a plethora of courses once they make up their mind to learn a foreign language. Language courses are still regarded the most popular foreign language learning method, but more and more people opt for a more expensive way of learning also in Hungary by choosing a private teacher, or a language course abroad.

One of the basic characteristics of the market economy is that it promotes competition and its emergence. Accordingly, market economy may be characterised more as a buyers’ market than a sellers’ market. In plain terms, if a language school does not have any customers, it does not have a reason for existence. So the language school, in order to be successful, has to convince its potential customers to go to it instead of its competitors. If a language school does not create any added value for its customers in comparison to its competitors, then it cannot exist in the long run on the market. Indeed, a sharp competition is taking place for each forint of the customers, and the customers are well aware of that. So the language school has to find the added values that will get the consumers to purchase and later, if they are satisfied, to return. If the language school is not able to offer to its customers what they expect (reasonable price, high quality, good location, discount, other services, etc.), then the language school has a rather small chance to stay in competition.

Perhaps one of the most important parts of a market analysis is to define the primary clientele. It is important to know their location, shopping habits (frequency of course attendance, which language school they are studying in, how much they spend on a specific language course, do they appreciate the language school). Naturally, there is no language school that could satisfy each and every learner as each learner has his/her individual preferences/shopping habits. Thus the market can be divided into different groups of customers, who have similar habits within that particular group, on the other hand, there are significant differences between the groups.

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On the market analysed, four customer segments can be differentiated, which are the following:

1. students before their school-leaving exam,
2. students in higher education who have passed their final exam but have no certificate yet,
3. businessmen,
4. those who are planning to take up a job abroad.

Students before their school-leaving exam and students who have passed their final exam but do not yet have their higher education certificate focus on language exams for general purpose, whereas busy businessmen working until late and those who plan their employment abroad prefer language exams for various specific purposes. The first segment mostly consists of the age group of 14-25, the third and fourth segments are made up of people aged 25-50. Businessmen come into contact with language schools primarily because of their workplace, as they have to use foreign languages in their everyday work. Having analysed the relevant factors, I consider the force of customers to be rather low.

Suppliers

I consider the suppliers' bargaining force low because the quality substitution of language teachers who might drop out can be done in a relatively short time. The force of trade unions can be hardly perceived. The printing houses producing the language books compete with each other for the orders.

Price competition on the market of printing houses is significant and similarly, there is a considerable competition between software companies programming digital solutions/online courses.

5. CONCLUSIONS AND SUGGESTIONS

According to the analysis there is an intense competition between language schools but they barely use online methods. Thus an appropriate ramp-up of online teaching could be a breakout point and could bring a competitive advantage. The newly entering language schools are also likely to start a form of online teaching. To avoid its impact the best method is to build up and maintain the school's own language learning community that also creates a brand and has a retaining force through its loyalty. This could also serve as a good weapon against substitution products. It is sensible to expand the focus clientele from the young generation, i.e. the representatives of the Alpha and Z generation, to older age groups, who look for language teaching for their work and professional progress.

Language teaching must become more personal by the use of the existing new digital tools to ensure the teacher-student relationship that is already known from traditional classroom teaching.

Language schools have to be open to the integration of the existing and new future digital devices if they want to stay on the market. They have to learn and apply new tricks of digital marketing based on network devices. A community should be built up around their language teaching/services, and meanwhile they should maintain confidence in their high quality service through the continuous, open feedback of the community/customers.

Such tools should be applied that have been accepted and even expected by the young target audience: applications, FB pages, Youtube channels. In these such community-building could take place that is specified as an objective above.

It is important that digitalisation is increasing gaining ground in language teaching, because online teaching materials are more interesting than the traditional ones as they are much closer to real life, are more up-to-date and contain more engaging and motivating visual elements. The

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language learners are offered opportunities for interaction, thus they can get immediate feedback on their current knowledge.

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Annex I: Language schools in Nyíregyháza and the surrounding region

	Big Ben Language School	Rating (1-5)	London Language School	Rating (1-5)	ILS Language School	Rating (1-5)	New York Language School	Rating (1-5)	Katedra Language School	Rating (1-5)
Territorial scope	Nyíregyháza and surrounding region	3	Nyíregyháza and surrounding region	3	Nyíregyháza and surrounding region	3	Nyíregyháza and surrounding region, Budapest	4	Nyíregyháza and surrounding region, language learning abroad in 38 cities	5
Target audience	students, adults, company employees (language courses deployed to companies for employees)	4	students, adults, company employees	3	students, adults, company employees	3	primary and secondary school pupils and adults, company employees	4	small children, students, adults, company employees	4
Languages taught	English, German, Italian, Spanish, Esperanto	4	English, German, Italian, Spanish, Esperanto	4	English, German, Russian, Hungarian	3	English, German	2	English, German, French, Italian, Spanish, Russian, Esperanto, Hungarian (19 languages)	5

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									countrywide)	
Types of language instruction	Courses for elementary, intermediate and advanced level general language exams	4	Courses for elementary, intermediate and advanced level general language exams	4	Courses for elementary, intermediate and advanced level general language exams	4	Courses for elementary, intermediate and advanced level general language exams	4	Courses for elementary, intermediate and advanced level general language exams	4
Price level	HUF 930 /hour (groups of 3-4) HUF 780 /hour (groups of 8-11)	3	HUF 933 /hour (groups of 4-6)	3	HUF 1166 and 972 /hour (30-36 hours, groups of over 5)	3	2 people-HUF 2000/person/45 min, 3 people-HUF 1500/person/45 min, group of 4 people: HUF 1000/person/45 min, group of 5-12: HUF 800/person/45 min	4	4 people HUF 1300/hour, one-to-one HUF 3500	3

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Discounts	10% off the price of the next level for the best student (result above 90%)	3	none	1	Pupils having completed forms 7-8-9 get 20% entry discount for the afternoon and evening courses of English and German, recommendation card: when arriving with a former student's recommendation both get a 10% discount, for 5 recommendation cards - 50%, family discount: 5% at all levels for every family member, in case of 3 family members: 10% for everybody, 4 family members: 15% for everybody	5	early bird discount of 20% for summer courses until 15.05	3	3 instalments	3
Option for taking the language exam	Pannon language exam (English and German)	2	Origo	2	<i>ECL, LanguageCert, TOEIC, OSD</i>	4	<i>Origo</i>	2	<i>iTolc, Corvinus</i>	3
Other special services (online training)	none	1	none	1	skype	2	none	1	none	1
Total score		24/40 =0.6		21/40= 0.53		27/40= 0.68		24/40 =0.6		28/40 =0.7

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	Student Stop Language School (University of Nyíregyháza)	Rating (1-5)	Mega Language Studio	Rating (1-5)	TIT	Rating (1-5)	SZABÓ Language School	Rating (1-5)
Territorial scope	Nyíregyháza and surrounding region	3	Nyíregyháza and surrounding region	3	Nyíregyháza and surrounding region	3	Nyíregyháza and surrounding region, Vaja, Nyírbátor, Dunaújváros, Veszprém	5
Target audience	college, university	2	public (individual, group), company	2	no available information	1	public: children, primary and secondary school pupils, college students, adults company	5
Languages taught	English, German, Russian, Japanese, Esperanto, Spanish (beginner)	5	English, French, German	3	English, German	2	English, Hungarian, Danish, German	3
Types of language instruction	Courses for elementary, intermediate and advanced level language exams for general and specific purposes of English and German	5	Courses for elementary, intermediate and advanced level general language exams, entrance exams, school-leaving exams	4	no available information	1	Courses for elementary, intermediate and advanced level language exams for general and specific purposes	5
Price level	HUF 550/hour (group)	4	1 person HUF 2700, 2-3-4 persons HUF	3	no available information	1	public: HUF 3800/45 min (increases by	2

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			1850, 1450, 1000 /hour				level) - max. 2 persons company: HUF 4800/45 min (increases by level) - max. 6 persons	
Discounts	no available information	1	no available information	1	no available information	1	no discount	1
Possibility for taking the language exam	no available information	1	no available information	3	Euroexam	2	no (only mock exam)	2
Other special services (online training)	no	1	no	1	skype	2	skype, company teaching: eFlow by SZABÓ - online program	3
Total score		22/40=0.55		20/40=0.5		13/40=0.33		26/40=0.65

BEHAVIOR INTENTION TOWARD ADOPTING MOBILE BANKING APPLICATIONS: A CASE STUDY OF YOUNG CUSTOMERS IN VIETNAM

Phan Dai Thich

PhD student of Faculty of Economics, University of Miskolc
Thichpd@hvnh.edu.vn

1. INTRODUCTION

The rapid advances in science, technology and innovation are bringing largely significant impacts on economies, and the trend of applying these achievements continues to grow in many industries. Finance and banking industry is not out of this trend. At present, Mobile Banking services are making significant successes and contributions to the growth of modern banking services (Lin, 2011). MB brings unprecedented benefits and experiences compared to traditional banking services such as internet banking or telebanking. Mobile banking allows customers to use mobile devices or smartphones to conduct banking transactions at any moment in any place. Customers do not need to go to branches/transaction points of banks. Instead, now they just use a mobile phone with internet/4G connection to conduct transactions. Mobile banking will not only bring practical benefits to customers, but commercial banks themselves will also gain their competitive advantages through MB services. Through MB, banks can serve its customers faster, information can be accessed in real-time, especially MB allows banks to personalize the demand of customers (Berraies et al., 2017). However, differences in regional culture, risks in transactions will form barricades against customers' behaviour intention to use MB. This is the difficult challenge that rising to commercial banks today.

In the aspect of consumer behaviour intention toward adopting MB, there is much research conducted in many countries. For example, by using extended TAM Alalwan et al. (2016) attempt to examine the factors impacting on Jordanian customers' intention to adopt mobile banking. And the research found that there are three constructs, namely: Perceived Usefulness, Perceived ease of use and Perceived Risk which have a significant influence on customers' intention. In Iran, Hanafizadeh et al. (2014) found that PE, PEOU, Need for interaction, perceived risk, perceived cost, compatibility with lifestyle, perceived credibility and trust can be used to explain the adoption of MB. In India, Priya et al. (2018) attempted to investigate the factors influencing MB adoption of young customers and found that PU, PEOU, perceived credibility and structural assurance are the most influent factors of behaviour intention to use MB.

On the whole, the research in MB theme in Vietnam is still quite modest when most of studies focus on e-banking, e-payment and facebook-banking services, there are currently no studies on MB apps adoption in Vietnam. Prominently, Cuong et al. (2015) investigated factors impacting on the young customers' intention toward using Facebook-Banking. Another study from Lin & Nguyen (2011) attempt to examine the factor influencing E-payment adoption in Vietnam and Taiwan through using Extend TAM model including 5 variables: Perceived Ease of Use, Perceived Usefulness, Perceived Risk, Information on E-payment and Personal innovativeness in Technology.

The structure of the paper will be based on 4 parts: Part 1 will briefly introduce mobile banking, followed by a literature review with a focus on presenting the hypothesises for model proposal.

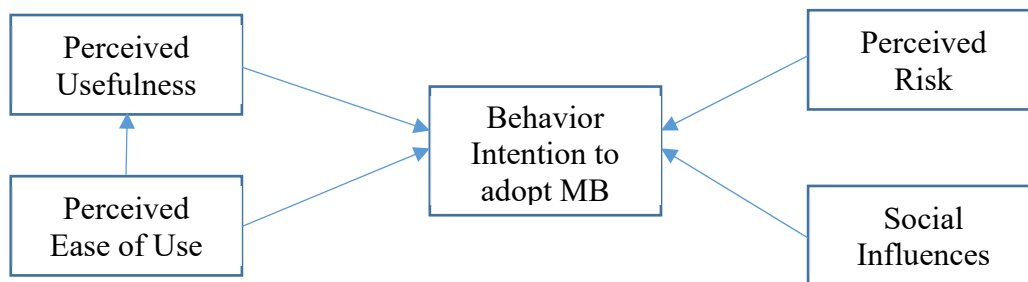
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Next, part 3 presents data analysis and methodology used for the research. The final part will be discussion and conclusion.

2. RESEARCH MODEL HYPOTHESIS

Prior studies have often focused on the use of proved theories such as Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), UTAUT. TAM is the most popular and widely used theory related to new technology (Shaikh & Karjaluoto, 2015). Accordingly, Davis (1989) first introduced TAM in which PU and PEOU are the two most important factors in explaining consumers' behaviour to adopt new technology. However, one of the drawbacks of the TAM model is excluding some external factors such as Risk or Social influence. Many later studies have expanded TAM by adding Perceived Risk or Social Influences into TAM model. Besides the TAM model, UTAUT and IDT are also built to explain user behaviour for new technology services. This article will build up previous studies, evaluates the expanded TAM model of 4 components: PU, PEOU, PR and SI and attempt to investigate the impact of these four variables on Behavior Intention of young customers toward adopting mobile banking apps in Vietnam.

Figure 1: Research model



Davis et al. (1989) defined Perceived Usefulness as “the degree to which a person believes that using a particular system would enhance his or her job performance”. By using TAM theory, most of the previous research affirmed that PU is the most influent factor impacting on behaviour intention to use/ adopt mobile banking (Hanafizadeh et al., 2014; Alalwan et al., 2016; Shaikh and Karjaluoto, 2015). Notably, PU was found to positively influence the adoption of MB services in Germany (Koenig-Lewis *et al.*, 2010), Jordan (Alalwan et al., 2016), Korea (Susanto et al; 2016), India (Priya et al, 2018). It means that consumers will use/adopt mobile banking services if MB is perceived that can bring benefits to them. Therefore, this research hypothesised:

H1: PU has a positive impact on behaviour intention to adopt MB apps

In TAM, along with PU, PEOU is considered as one of the most important factors of behaviour intention to adopt new and innovative technologies. In the theme of MB application, PEOU refers to the extend to which an individual believes that using MB apps is effortless (Davis, 1989). Alalwan et al. (2016) also supported that PEOU plays a key antecedent in determining BI using MB by Jordania customers. Many prior pieces of research also found that PEOU has direct and indirect impacts on BI through supporting the influence of PU on BI (Davis et al, 1989; Luarn and Lin, 2005). Makanyeza (2017) also support this argument and found that PEOU has a positive effect on PU of MB services in Zimbabwe. New technology always requires users to have a certain ability to use. Therefore, the technology will be considered as useful if it is perceived to be easy to use. In MB services, PEOU found to have a positive impact on PU (Alalwan et al., 2016). Accordingly, it is hypothesized:

H2: PEOU has a positive impact on BI to adopt MB apps

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H3: PEOU has a positive impact on PU to adopt MB apps

Perceived risk refers to the degree of probability that there is a loss incurring at using innovative technology (Pavlou, 2001). Naturally, financial transactions through Mobile banking apps come up with unique characteristics such as intangibility, uncertainty, technological dependence. Risks encountered in mobile banking apps can bring anxiety/fearless for bank customers, the more they perceive related risks as using technology the less they adopt it. Prior studies found that there is an inverse relationship between Perceived Risks and behaviour intention toward adopting MB apps (Alalwan et al., 2016; Makanyeza, 2017; Mortimer et al., 2015; Tan & Leby Lau, 2016). Therefore, we hypothesised:

H4: PR has a negative impact on BI to adopt MB apps

In prior studies Social Influences (SI) can be referred to under different terms, such as Social Factors (Bankole & Bankole, 2017), Social Norms (Makanyeza, 2017; Goh & Sun, 2014) or Social Influences (Mortimer et al., 2015). However, generally, these terms are changeable to each other as they all refer to as "the degree to which an individual perceives how others opinion important is when he/she adopt an innovative technology" (Venketesh et al., 2003). In Singapore, it was found that SI has a significant positive impact on the intention of adopting MB (Riquemel and Rios, 2010). This finding is in line with Makanyeza (2017), Mortimer et al. (2015), Bankole & Bankole (2017), Tan & Leby Lau (2016). Therefore, we proposed the hypothesis:

H5: SI has a positive impact on BI to adopt MB apps

Table 1: Summary of recent research in factors impacting on customers' behaviour intention towards adopting MB services.

Author	Year	Country	Sample	Theory	Technique	Factors influencing on Behaviour Intention
Sharma et al.	2017	Oman	225	Extend TAM	SEM	PU, PEOU, PT, Autonomous Motivation; Controlled Motivation
Susanto et al	2016	Korea	301	Expectation-Confirmation Model	SEM	PU, US, SE
Tan & Leby Lau	2016	Malaysia	347	UTAUT	Regression Analysis	PE, EE, SI, PR
<u>Tran & Corner</u>	2016	New Zealand	183	IDT & TAM	PLS-SEM	PU, PCR, PCO, MB face-to-face
Koenig-Lewis et al	2010	Germany	263	TAM & IDT	SEM	PC, PU, PR
Alalwan et al	2016	Jordan		Extend TAM	SEM	PU, PEOU, PR
Bankole et al	2017	South Africa	220	UTAUT	PLS-SEM	Trust&Privacy; Utility Expectancy; EE; SI; Power Distance
Hanafizadeh et al	2014	Iran	361	Extend TAM	SEM	PU, PEOU, Need for interaction, PR, PCO, Compatibility with lifestyle, PT, Credibility
Makanyeza	2017	Zimbabwe	232	Extend TAM & IDT	SEM	PU, SE, SI, RA, CMPTBLT, PR
Mehrad & Mohammadi	2016	Iran	384	Extend TAM	SEM	PU, ATT, Word of Mouth
Mortimer et al	2015	Thailand, Australia	348	Extend TAM	SEM	PU, PR, PEOU (Thailand); PU, PR, SI (Australia)
Priya et al	2018	India	269	Extend TAM	Regression Analysis	PU, PEOU, Structural Assurance, PCR,

Note: PU-Perceived Usefulness; PEOU- Perceived Ease of Use; PT-Perceived Trust; ; US- User Satisfaction; SE- Self-Efficacy; PE-Performance Expectancy; EE- Effort Expectancy; PCR-Perceived Credibility; PC- Perceived Compatibility; ATT- Attitude

3. RESEARCH METHODOLOGY

Data using for this research is collected through survey questionnaires. Firstly, there is a pilot questionnaire conducted with the help of 10 lecturers in a university to check the propriety of language. After that, based on their feedback, the questionnaire is revised. The author goes to a university campus in Hanoi where most of the young people use a smartphone. At the break time, we come into classes and handouts questionnaires after having a brief introduction about the purpose of this research. 250 questionnaires was returned, but 6 was excluded because they have not yet opened bank account. The remaining 244 were used for analysis. All are bank customers and have used the MB application on mobile phones. The structure of questionnaires includes 2 part. The first part is geographic information which has 6 question about: gender, age, income, living place, experiences using MB services, and daily using time. The second part includes 10 items which use 5-point Likert scale to measure, from 1 (strongly disagree) to 5 (strongly agree).

3.1. Geographic profile

Among 244 respondents, Female account for 76%, about 3 times than the percentage of male (24%). All of the respondents are undergraduate students, from 19 to 24 years old. They all have bank accounts and use MB apps on mobile phones. Over 50% are very experienced in using Mobile Banking applications. However, most of respondents only use MB apps for less than 1 hour a day.

Table 2: Demographic profile of the sample

	Option	Frequency (n)	Percentage
Gender	Male	58	24%
	Female	186	76%
Age	19	20	8.1%
	20	55	22.5%
	21	139	56.9%
	22	23	9.4%
	23	6	2.4%
	24	1	0.7%
Monthly Income	<=1,000,000 VND/month	37	15.7%
	1,000,001-2,000,000	65	26.6%
	2,000,001-3,000,000	65	26.6%
	3,000,001-4,000,000	34	13.9%
	4,000,001-5,000,000	31	12.7%
	5,000,001-7,000,000	9	3.6%
	>7,000,001	3	0.9%
City	Citizens	154	63%
	Others	90	37%
MB experiences (Years)	1 years	35	14.3%
	2 years	119	48.7%
	3 years	90	36.8%
Daily using time	Less than 1 hour/day	187	76.6%
	More than 1h	31	23.4%

3.2. Results

In this research, we use smartPLS 3.0 to examine our hypothesized proposals. Our study follows the below steps. Firstly, we analyse the reliability and validity of data based on average variable extracted (AVE), Composite scale reliability (CR), Cronbach Alpha and Outer Loading. With the AVE of all constructs is greater than the cut-off value of 0.5. CR index is also above the acceptable threshold of 0.7. Cronbach Alpha index is also above the acceptable threshold of 0.7. With constructs validity, the result shows that the Outer Loading indexes are all greater than 0.7 recommended threshold. This shows that the data can be used reliably for the analysis process.

Table 3: Outerloading, AVE, CR, Cronbach Alpha

Constructs	Number	Outer Loading	AVE	CR	Cronbach Alpha
Perceived Ease of Use	PEOU1	0.880	0.664	0.797	0.791
	PEOU2	0.744			
Perceived Usefulness	PU1	0.823	0.623	0.768	0.766
	PU2	0.755			
Perceived Risks	PR1	0.859	0.705	0.827	0.826
	PR2	0.820			
Social Influences	SI1	0.775	0.605	0.754	0.754
	SI2	0.781			
Behaviour Intention	BI1	0.828	0.727	0.842	0.841
	BI2	0.877			

After that, we will examine the Partial Least Square of the proposal model and hypotheses. Next consistent PLS Bootstrapping test was performed to evaluate path coefficients. The statistics generated a significant positive relationship between PU and BI (path coefficient = 0.48; p-value<0.001). Notably, the result also revealed that PEOU has a insignificant impact on BI (path coefficient = -0.045; p-value>0.05). However, it showed that PEOU has indirect impact on BO though facilitating relationship between PU and BI, when PEOU has significant positive impact on BI (path coefficient = 0.577, p-value<0.001). In this research, SI has a significant effect on BI (path coefficient = 0.296; p-value< 0.001). But PR has not a significant effect on BI (path coefficient = -0.037; p-value>0.05). In general, based on the statistics from Structural Equation Model – PLS, PU and SI have a significant impact on BI and PU is the most influential factor affecting BI among young customer in Vietnam.

Table 4: The result of Consistent PLS Bootstrapping test

Hypothesised path	Path Coefficient	T statistics	P value	Supported
PU->BI	0.480	4.011	***	H1: Yes
PEOU->BI	-0.045	0.372	0.710	H2: No
PEOU->PU	0.577	7.284	***	H3: Yes
PR-> BI	-0.037	0.265	0.791	H4: No
SI->BI	0.296	3.199	***	H5: Yes
Note: ***p<0.001				

Table 5: R Square

	R square	R square Adjusted
BI	0.369	0.358
PU	0.332	0.330

4. DISCUSSION

The result found that PR has an insignificant negative impact on behaviour intention of young customers in Vietnam. It seems not to be in line with previous studies (Alalwan et al., 2016; Koenig-Lewis et al., 2010; Makanyeza, 2017). For example, Alalwan et al, (2016) found that PR becomes a barrier to the adoption of mobile banking services in Jordan. However, our finding is in line with the results from Priya et al. (2018). It can be explained that recently banks in Vietnam have greatly improved the security technology for electronic transactions. The occurrence of losing money on accounts when conducting transactions on mobile banking is minimized. Then, it can reduce the customers' perception of risks in using MB services.

The result show that PEOU has no impact on BI, however, PEOU has an indirect influence on BI through facilitating the relationship between PU and BI. The early part seems not to be in line with prior studies (Alalwan et al., 2016; Mortimer et al; Priya et al, 2018; Sharma et al., 2017). But these findings are in line with the research from Davis (1989); Davis et al. (1989); Venkatesh and Davis (2000). This can be explained by the fact that young people in Vietnam are familiar with new technology applications. Experiences from mobile applications are plentiful, so they require more complex applications. This is in line with customers in Australia (Mortimer et al., 2015).

The finding also confirms that when consumers feel that using new technology is useful, they will adopt it. In the study of Susanto et al (2016), it was found that PU has a positive impact on the continuance use intention of Korean customers. Mortimer et al (2015) also affirms that in Thailand and Australia, PU plays the biggest role in customers' Intention to use MB services in the two countries, the impacts of PEOU and SI, however, may vary among countries. In Vietnam, this can be seen that young customers realize that in case of using MB services brings many benefits such as: saving travel time, fast, conveniences they will use. This conclusion is consistent with the finds of Davis (1989) and reaffirms that PU is the most influential factor in BI. Between the two variables that have positive relationship with BI, this study reaffirms that PU is the most influential variable to BI in the context of young vietnamese customers. Moreover, our study reaffirm that PU is the most influence variable to BI in context of young vietnamese customers. This finding is in line with the conclusion from Tran & Corner (2016), Makanyeza (2017).

The result from this study shows that SI has a positive impact on BI of young customers in Vietnam. This finding is in line with prior studies (Makanyeza, 2017; Riquelme & Rios, 2010). It can be seen that the impact of social influence on behaviour intention to use MB services is different among countries, regions, genders. For example, the research in Islamic MB in Malaysia (Goh & Sun, 2014) concluded that SI has significant impact forward using MB services for Females but, it is not significant for Males. Another research about behaviour intention of customers in Thailand and Australia found that Thai consumers pay less attention at the opinion of their relatives or friends, however, in Australia, the finding shows that SI has a positive impact on BI (Mortimer et al, 2015). For young customers in Vietnam, it can be explained by that young people often use MB services for transactions between them and their families/friends. Typically, young customers often receive monthly financial support from parents or siblings. Therefore, their behaviour intention to adopt MB will depend heavily on the opinions of the people around them.

5. CONCLUSION

For the above important results, this study has contributed to a better understanding of the behaviour intention of young customers in Vietnam for using MB apps. This practical contribution provides the most meaningful information for financial institutions who want to appeal to more customers to their banking services. The market for young customers will be a potential niche market for banks to provide new smartphone-based services. From the research, we conclude that usefulness and social influences will be the factors that influence the behaviour intention toward adopting MB apps. Banks need to add more useful features to help customers realize the convenience, time-saving, improving users' working performance, then they will use bank's products. At the same time, Social influence suggests that opinions from family, relatives, and friends will greatly influence the behaviour of young customers. In the context of increasing technology competition, banks are equipped with protective features, limiting the risks faced by using MB apps should gain their competitive advantages by improving the usefulness of MB apps and simplifying the operation process. Therefore it can lead to efficiency for customers.

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ISSUES REGARDING DEFINING TALENT WITHIN THE DOMAIN OF TALENT MANAGEMENT

Eszter Daruka¹

¹ Assistant Lecturer, Department of Management and Business Law,
Institute of Business Economics, Eötvös Loránd University,
Hungary, 1053 Budapest, Szép utca 2., +36-30-243-7119, daruka@gti.elte.hu

SUMMARY

Recently, the importance of talented employees has arisen, while talent management (TM) became a key HRM activity. However, there are a lot of inconsistencies about the field – e.g., defining the basic terms still lacks consensus. This paper was aimed to contribute to clarify the issues regarding defining talent. This research on the explicit talent definitions resulted in that 138 out of the 507 examined peer-reviewed TM publications contained explicit comprehensive definition(s), altogether 363 ones. However, huge differences appeared regarding the number of the definitions in an article – 1 to 46. The definienda also varied. The term ‘talent’ was explicitly defined in most cases, but similar definienda (containing somehow the word ‘talent’) were found as well, however, several different expressions were defined, too. The exclusive subject talent approach unequivocally dominated other definienda. From its two sub-approaches, the ‘talent as high potential’ tension appeared in more cases than the ‘talent as high performer’ tension. There were a few examples for the ‘talent as mastery’ tension and for the inclusive subject approach.

1. INTRODUCTION

The importance of talented employees has arisen, talent “as a unique resource takes on crucial importance for the organization” (Karas, 2017, p. 290), beyond that, in business context talents are strategically important (Mazurkiewicz, 2017). Talent management (TM) has become a major HRM activity (Rani & Kumar, 2018) since the so-called ‘War for Talent’ was declared in 1997 by a McKinsey & Company consultant (Axelrod, Handfield-Jones, & Michaels, 2002; Chambers, Foulon, Handfield-Jones, Hankin, & Michaels, 1998; Michaels, Handfield-Jones, & Axelrod, 2001). Although more and more organizations are concerned in TM (Cappelli, 2008; Preece, Iles, & Chuai, 2011), there are still a lot of inconsistencies about the field raising challenges in managing talents (Savanevičienė & Vilčiauskaitė, 2017). For example, there is a lack of consensus about the terms, i.e. the meaning of both TM and talent (Collings & Mellahi, 2009; Gallardo-Gallardo, Dries, & González-Cruz, 2013; Höglund, 2012; Lewis & Heckman, 2006; Meng et al., 2016; Sart, 2014; Tansley, 2011; Thunnissen, Boselie, & Fruytier, 2013), what is more, it is debated within companies what talent is meant to be and how it should be managed (Stahl et al., 2012; Swailes, 2016). Without settling the confusion about the exact meaning of talent, it is hard to establish widely acceptable TM theories and practices. (Gallardo-Gallardo et al., 2013)

Generally, TM is closely related to the conceptualization of talent, it affects all TM programs. However, the approaches to talents within TM significantly differ. This paper is aimed to contribute to clarify the issues regarding defining talent (in the context of HRM), thus to serve the development of the field of TM. It provides a review of HRM-related talent approaches, and examines the definitions in the selected peer-reviewed TM articles.

2. LITERATURE REVIEW

In fact, a wide variety of definitions appears in the HRM-related TM literature. In the debate about how talent can be conceptualized, several viewpoints, perspectives, approaches and tensions became manifest. (Table 1)

Many authors (e.g., Gelens, Dries, Hofmans, & Pepermans, 2013; Meyers & van Woerkom, 2014; Meyers, van Woerkom, & Dries, 2013; Nijs, Gallardo-Gallardo, Dries, & Sels, 2014) wrote about talent tensions – at least partially – building on the most seminal works of Dries (2013) and Gallardo-Gallardo et al. (2013) on this topic. Hereafter we briefly summarize those findings of the aforementioned works that are of most relevance for this paper.

Tansley (2011, pp. 269–273) distinguished three levels regarding the explanation of talent: organizational, group, and individual ones. In the latter, talent can be defined as certain behaviors, as a combination of high performance versus high potential, as high potential, as high performance, or as individual strengths.

Based on the comparative analysis of six theoretical perspectives on talent, Dries (2013, pp. 275–280) identified five so-called talent tensions: (1) object-subject (talent as characteristics of people vs. talent as people), (2) inclusive-exclusive (all people are talented vs. some people are more talented), (3) innate-acquired (“about the extent to which talent can be taught and learned”), (4) input-output (“whether talent depends more on motivation or ability”), and (5) transferable-context dependent (“about the extent to which talent is conditional on its environment”).

Gallardo-Gallardo et al. (2013, pp. 293–297) were concerned about the object-subject tension, and offered a complex framework for defining talent in the world of work. The authors differentiated more approaches within the object-subject tension, and categorized the inclusive-exclusive tension as a subset of the subject approach. Within the object approach they indicated four sub-approaches: talent as natural ability (“inborn, unique abilities that lead to superior performance”), talent as mastery (“systematically developed skills and knowledge that lead to superior performance”), talent as commitment (“commitment to one’s position and to one’s employing organization”), and talent as fit (“being in the right organization, in the right position, at the right time”). In the inclusive subset of the subject approach talent means all the employees of the given organization, while talent as high performers and talent as high potentials were differentiated within the exclusive subset of the subject approach.

Gelens, Dries, Hofmans, and Pepermans (2013) mentioned the inclusive and exclusive approaches to TM, and defined talent from human capital perspective assessing their value and uniqueness.

Meyers, van Woerkom, and Dries (2013) distinguished five different talent approaches: talent seen as giftedness; talent as individual strength; talent as (meta-) competencies; talent as high potential; and talent as high performance.

Meyers and van Woerkom (2014) differentiated four talent philosophies according to the perception of talent as (a) exclusive (rare) or inclusive (universal), and (b) stable or developable, thus creating exclusive/stable; exclusive/developable; inclusive/stable; and inclusive/developable talent philosophies.

According to Nijs, Gallardo-Gallardo, Dries, and Sels (2014), talent consists of an ability component with innate ability and systematic development; and an affective component with motivation and interests. Additionally, they assumed that talent is evidenced by excellence, thus excellence should be the main criterion for talent.

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Table 1: The most influential articles about approaches to talent/talent tensions

Source	Viewpoints about talent
Tansley (2011, pp. 269–273)	Three levels of explanation about talent in organizations: <ul style="list-style-type: none"> • “Talent at the organizational level; • Talent at group level: talent pools; • Talent as individually specific: Talent as certain behaviors, Individual talent as a combination of high performance versus high potential, Talent as high potential, Talent as high performance, Talent as individual strengths.”
Dries (2013, pp. 275–280)	Identified: <ul style="list-style-type: none"> • “Theoretical perspectives: talent as capital; talent as individual difference; talent as giftedness; talent as identity; talent as strength; and talent as the perception of talent; • Tensions: object–subject; inclusive–exclusive; innate–acquired; input–output; and transferable–context-dependent.”
Gallardo- Gallardo et al. (2013, pp. 293–297)	Theoretical approaches to talent: <ul style="list-style-type: none"> • “ ‘object’: talent as natural ability; talent as mastery; talent as commitment; talent as fit; versus • ‘subject’: inclusive=talent as all people; exclusive=talent as some people – high performers or high potentials.”
Gelens et al. (2013, p. 342)	<ul style="list-style-type: none"> • Inclusive-exclusive approaches to TM • Talent as human capital perspective
Meyers et al. (2013, pp. 306–308)	<ul style="list-style-type: none"> • Talent approaches: talent as giftedness; talent as individual strength; talent as (meta-)competencies; talent as high potential; talent as high performance.
Meyers, van Woerkom (2014, pp. 195–200)	<ul style="list-style-type: none"> • Four talent philosophies that vary in their perception of talent as (a) rare (exclusive) or universal (inclusive), and (b) stable or developable: exclusive/stable; exclusive/developable; inclusive/stable; and inclusive/developable talent philosophy.
Nijs et al. (2014, pp. 182–184)	Talent= <ul style="list-style-type: none"> • Ability component: innate ability, systematic development; • Affective component: motivation, interests. • Talent is evidenced by excellence (main criterion for talent)

Source: Author’s own work based on Tansley (2011, pp. 269–273), Dries (2013, pp. 275–280), Gallardo-Gallardo et al. (2013, pp. 293–296), Gelens et al. (2013, p. 342), Meyers et al. (2013, pp. 306–308), Meyers, van Woerkom (2014, pp. 195–200), Nijs et al. (2014, pp. 182–184)

3. DATA AND METHODS, ANALYSIS

This research aimed to examine how talent was defined in peer-reviewed TM publications and what issues were existing regarding it. So, firstly, we searched for those publications in the Web of Science (WoS) database which contained “talent management” in the topic field without any restrictive conditions on the date of publication. This search resulted in 612 items at the end of 2018. Non-English papers and irrelevant types of publications (e.g., call of papers) were excluded, likewise one publication about TM in sport – without any connection to HRM –, too.

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Finally, altogether 507 items – articles, book chapters, proceedings papers, and reviews published in the WoS – were considered for deeper analysis.

At first, the author collected all the talent definitions manually in order to analyze the talent conceptualizations within the selected peer-reviewed TM publications, regardless whether they were explicit or implicit conceptualizations, general or context specific or special type ones; or they defined the term ‘talent’ or had other definiendum/definienda.

A definition was marked as an implicit one if it indirectly expressed what talent is and/or only the TM definition included (at least to some degree) what talent was meant to be. For example, “Defined most broadly, global talent management is about systematically utilizing IHRM activities (complementary HRM policies and policies) to attract, develop, and retain individuals with high levels of human capital (e.g., competency, personality, motivation) consistent with the strategic directions of the multinational enterprise in a dynamic, highly competitive, and global environment.” (Tarique & Schuler, 2010, p. 124)

It was denoted whether a definition was comprehensive, or valid only in a given context, or a special talent type. For example, talent in academia – “An academic talent may stand out as he is viewed as a person with high qualification and is considered as an expert in his field and has capabilities that a very few person can achieve, i.e. scientific approach and academic know how.” (Saddozai, Hui, Akram, Khan, & Memon, 2017, p. 547). For instance, managerial talent as a special type – “Managerial talent is a combination of a sharp strategic mind, leadership ability, emotional maturity, communicative skills, and the ability to attract and inspire other talented people, entrepreneurial instincts, functional skills, and the ability to deliver results (Michaels et al., 2001).” (Tafti, Mahmoudsalehi, & Amiri, 2017, p. 16)

Moreover, the definiendum was indicated in each case, showing exactly the term that was defined, for example, A player – “[...] those individuals with high potential who are of particular value to an organisation.’ (i.e. A players).” (Powell, 2014, p. 263)

4. FINDINGS

The analysis of the 507 TM articles resulted in that 138 of them contained a comprehensive, explicit definition about who was in the center of TM. While we found 276 publications which paraphrased talent implicitly. Besides the comprehensive definitions, there were 74 articles with at least one or more context specific definitions, and 10 articles with special types of talents. We note that there are overlaps between these groups of articles (for example, containing explicit and implicit definitions as well).

In this work, hereafter, we focused on the explicit talent definitions for a deeper analysis.

In the 138 articles with comprehensive explicit definitions, we found 363 definitions altogether. Namely, there were more than two definitions in an article on average, but it is worth noting that huge differences appeared regarding the number of the definitions. (see Figure 1)

There was one definition in 59 articles (41% of the 138), there were two definitions in 35 articles (24%), three definitions in 19 articles (13), four definitions in 9 articles (6%), five definitions in 7 articles (5%), six to eight definitions in 7 articles (5%) together, while, one article (Gallardo-Gallardo et al., 2013) contained 14 definitions alone, and another one (Gallardo-Gallardo & Thunnissen, 2016), on the extreme, 46 ones.

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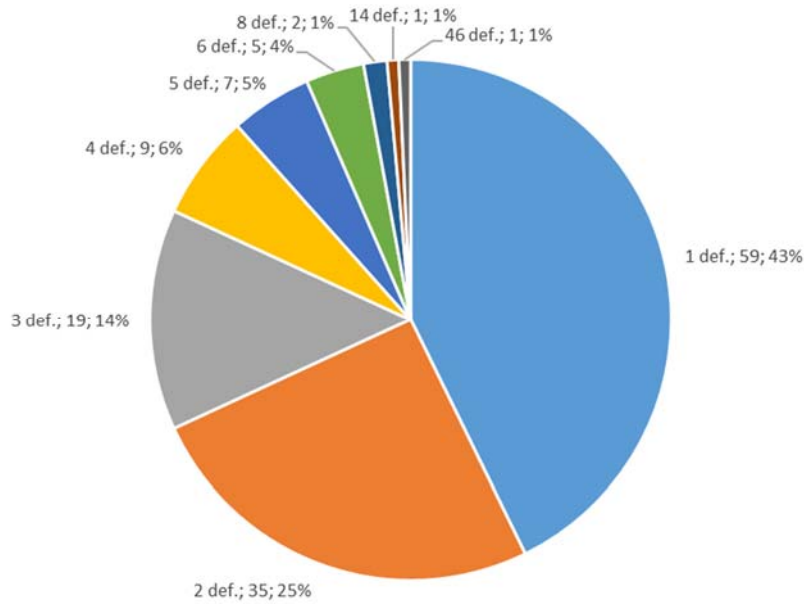


Figure 1: The numbers of explicit definitions in the examined 138 articles
Source: Author's own work

Examining the 363 definitions, we found 425 definienda altogether, since in 47 cases more than one (2 to 6) concepts were defined at the same time in the definiens, for example, talent and high potential (Ehrnrooth et al., 2018); or talented, superstar, A player, high flyer, and talent (Mensah, 2015).

Table 2: Talent and 'talent'-containing concepts as definienda in the examined articles

Definiendum	Occurrence
talent	302
distinctively talented employee	1
high potential talent	2
highly talented individual	1
human talent	2
individual talent	2
organizational talent	3
pivotal talent	1
talented	7
talented employee	14
talented individual	4
talented people	2
talented person	1
talented worker	1
the most talented employee	1
the most talented individual	1
top talent	1
valued talent	1

Source: Author's own work

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Furthermore, it was noticed that the definienda varied in the examined definitions, as several expressions occurred, and not always the term of ‘talent’ was defined in itself. The term of ‘talent’ was explicitly defined in 302 cases. (Table 2) Additionally, in 45 cases a similar definiendum (containing somehow the word ‘talent’) was found – such as (in alphabetical order) high potential talent, highly talented individual, human talent, individual talent, organizational talent, pivotal talent, talented, talented employee, talented individual, talented people, talented worker, top talent, or valued talent.

However, in 78 cases different expressions were defined as the subject of TM in the given article. (Table 3) In line with Gallardo-Gallardo et al.’s (2013) framework of talent approaches, we found that the exclusive subject talent approach unequivocally dominated these definienda. Within the exclusive subject talent approach, the ‘talent as high potential’ tension appeared in less definitions. In 29 cases, high potential and high potential employee (HiPo) or a kind of synonym of it (those with high potential) was defined. While in 40 cases (high performer, high performing employee, high performing individual, high flyer, exceptional performer, overachiever, A player, A grade, A job, star, star employee, superstar, superkeeper), the definiendum was in line with the ‘talent as high performer’ tension. In 1 case (high performance and high potential), both of these tensions appeared in the given definiendum.

Moreover, in 2 cases, we found examples for the ‘talent as mastery’ tension within the object approach – such as expert, and valuable contributor. Interestingly, we also found 4 examples for the inclusive subject approach using the terms talent and human capital or people interchangeably as definienda. Nevertheless, there were 2 definitions on pivotal roles, as well.

Table 3: Other expressions as definienda in the examined articles

Definiendum	Occurrences
high potential	19
high potential employee (HiPo)	9
those with high potential	1
high performer	9
high performing employee	3
high performing individual	1
high flyer	1
exceptional performer	1
overachiever	1
A player	13
A grade	1
A job	1
star	6
star employee	1
superstar	1
superkeeper	1
high performance and high potential	1
expert (behavior)	1
valuable contributor	1
human capital	3
people	1
pivotal roles	2

Source: Author’s own work

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To sum up, the analysis of the explicit comprehensive talent definitions highlighted that besides the term of ‘talent’, several other expressions were defined as the subject of TM in the examined articles. This makes it quite hard to find and compare the different talent conceptualizations.

5. CONSLUSIONS, FURTHER RESEARCH QUESTIONS

This research focused on the explicit talent definitions in peer-reviewed TM articles. The analysis of explicit talent definitions in the selected peer-reviewed TM articles resulted that only 138 out of the 507 publications contained explicit comprehensive definition(s). Altogether 363 direct general definitions on the subject of TM were found. While 59 out of these 138 articles contained one explicit definition, most of them had at least two direct definitions, but on the extreme, one article mentioned 46 explicit definitions alone.

Examining the 363 definitions, we found 425 definienda in them, as in some cases more than one (2 to 6) concepts were defined at the same time in the given definiens. Moreover, it was noticed that the definienda varied in the examined definitions: besides talent, several expressions occurred as concepts defined. The term of ‘talent’ was explicitly defined in most (302) cases. In addition, in 45 cases a similar definiendum (containing somehow the word ‘talent’) was found – for instance, highly talented individual, human talent, talented employee, or top talent.

However, in 78 cases different expressions were defined as the subject of TM. We found that the exclusive subject talent approach unequivocally dominated these definienda. Within the exclusive subject talent approach, the ‘talent as high potential’ tension appeared in less definitions, as in 29 cases, high potential or a synonym of it was defined. While in 40 cases, the definiendum was in line with the ‘talent as high potential’ tension – for example, high performer, A player, or star as the concept defined. In 1 case, both of these tensions appeared in the given definiendum. Furthermore, there were 2 examples for the ‘talent as mastery’ tension within the object approach – such as expert, and valuable contributor. Interestingly, we also found 4 examples for the inclusive subject approach using the terms talent and human capital or people interchangeably as definienda. Nevertheless, there were two definitions on pivotal roles, as well.

As the analysis of the explicit comprehensive talent definitions highlighted – besides the term ‘talent’ – several other expressions were defined as the subjects of TM in the examined articles. The different talent conceptualizations are not so easy to find, categorize, and compare to each other, like to serve as a basis for a formal TM program.

Possible future research could examine the implicit, context specific and special talent type definitions, too. A next step could be the examination, comparison, and classification of all the collected definienda according to the talent tensions.

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