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PREFACE

Two years have passed and, once again, we are here with our international meeting of academics and professionals – the conference on Strategic Management and its Support by Information Systems (SMSIS). This year, the conference is held for the 13th consecutive year and, again, we are glad for the support from the dean of the Faculty of Economics, VŠB – Technical University of Ostrava, prof. Zdeněk Zmeškal.

The first SMSIS conference has been held in 1995 and, to this day, it continues as a traditionally bi-annual platform for professional discussions and exchange of experiences between research teams from various countries and institutions around the world, namely from the Czech Republic, Hungary, Iran, Spain, Slovakia and the United Kingdom. The conference focuses on a relatively broad scale of topics that are associated with:

- strategic management,
- quantitative methods and their applications in management issues,
- trends and issues in information systems design, management and security,
- and applications of new media and intelligent tools in the Digital Economy.

This year, several new hot topics are presented and discussed, namely, social dimension of strategic management, benchmarking in supply chain management, spatial econometrics, cybersecurity for industry 4.0, or artificial neural network and machine-learning with human-in-the-loop.

The SMSIS 2019 conference is organized in cooperation with the Czech Society for Systems Integration (CSSI) and three Czech universities: VŠB – Technical University of Ostrava (Faculty of Economics), University of Economics in Prague (Faculty of Informatics and Statistics) and Masaryk University in Brno (Faculty of Informatics).

The SMSIS conference proceedings usually contains about 50 carefully selected scholarly and professional papers, which are double-blind reviewed by members of the programme committee, who certainly deserve thanks for their devoted work. I would like to thank the members of the organizing committee as well, for their dedication and hard-work during the preparation and organization of the SMSIS 2019 conference event.

I wish all of us to be successful in the presentation of our work, our contributions to be beneficial to conference participants and that the event will meet everyone's expectations.

To a successful conference!

Jana Hančlová

May 2019

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A

STRATEGIC MANAGEMENT

Performance management features in the light of social innovation in the public sector

Daniella Kucsma[1]

Abstract. My research focuses primarily on the public service sector, as many expectations have to be met in this area, both when examining organization interests and customer needs. Nowadays, social innovation activities also play a significant role, as every public service company wants to provide a service that meets the expectations of society and implements developments that represent public interest. I am looking for the answer to the question why it is good for a public service organization to carry out social innovation and how this can affect the organization's performance management system. The answer is simple, as it leads to competitiveness, efficiency, cheaper service and social cohesion. However, it is also worth examining not only how to integrate these elements, but how to focus on the measurability of the organization, and the contribution to the performance measurability. In my work, it shows what performance management methods are and what is being used in practice by the examined health care organization.

Keywords: Performance Management, Public Sector, Social Innovation, Healthcare, Balanced Scorecard.

JEL Classification: H83, L25, L32, M10

1 Introduction

Numerous publications deal with the important role of a performance management system in the life of an organization. Nowadays, this area is not only present in the business sphere but public service organizations also use their methods and approaches. However, the public sector has specifications that make performance management work in a different field and way than the private sector. (Kaplan and Norton, 2002, Horvath, 2016). Performance management is one of the key elements of management toolbox, so it should be not only dealt with in the business sector but also among public service organizations. In this article I summarize some of the results of my research in the public sector and use logical elements to analyze the potential of social innovation in this sector. Additionally, I propose the use of a general strategic map as a framework for both the objective operation of performance management and the utilization of social innovation opportunities. The purpose of this article is to illustrate how well-chosen performance management contributes to achieve the target hierarchy described at the beginning of this paper. Furthermore, I consider it important to highlight the social innovation focus of the research, as I assume that this can contribute to the success of the research.

2 Characteristics of performance management characteristics in the public sector

The first task of each system is to define one or more goals to be achieved during the operation, so it is important to focus on what the particular organization needs to pay attention when examining and evaluating a public service organization. Primarily, based on the literature

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examination, I present the aims of the operation of a public service organization and the possible methods of its performance evaluation system. In the second place, I conducted in-depth interviews with the leaders of the investigated institutions, which helped me to get a clear picture of the performance rating system that health institutions favour.

During the literature research I examined numerous definitions and it can be concluded that they highlighted and formulated elements and as the main goal of organizational efficiency and effectiveness within performance. However, these goals should be interpreted in terms of what they mean and how they can achieve and measure these two factors. So I set up a general target hierarchy illustrated in Figure 1.

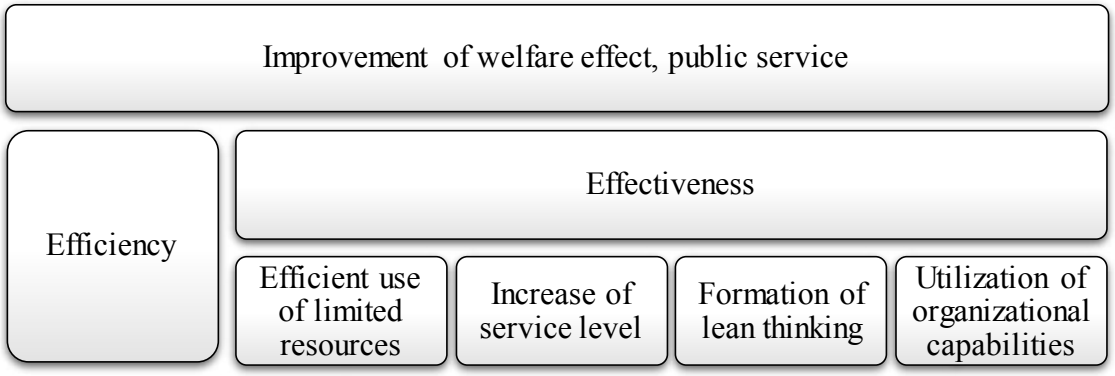

Figure 1 Target hierarchy of performance management of public service organizations [Kocziszky and Veres-Somosi, 2016]

In Figure 1 it can be seen that the top level is improvement of the welfare effect, since in the case of a public service organization this is the main goal, regardless of the sector. (Kocziszky and Veres-Somosi, 2016). So this priority should be given in case of performance management system also. At the second level, efficiency and efficiency are at stake. We are talking about non-competitive sector but performance indicators need to focus on these elements. At the third level, there are elements that promote the above-mentioned higher-level goals, and it is necessary to focus on the following elements:

- Use of limited resources: limited term is intentionally introduced here, as in the case of a public service organization economic, human and physical assets are limited. Health sector is a very good example for this, as hospitals have a cost control system, so their financial resources are limited within specific facilities. It is also worth mentioning that in this sector profit maximization is not the ultimate goal, but as it manages public finance, must concentrate on efficient and cost-effective operation. (Csath, 2016).
- Increase of service level: Although we are talking about a public service organization but one of the features of this kind of organizations is that its customer base is the entire population. Therefore, services need to be provided not only for a certain layer, but also in some way almost everyone is in contact with this type of organization throughout their lives.
- Developing Lean Approach or Process Approach: since the structure of the organization also shows that it is not a simple one-line organization, the coordination and development of the processes should be taken care of. The lean approach basically targets the loss-making operation of services as much as possible. International

literature has reported a large number of health related best practices in this field (Molnar and Kerchner, 2016).

- Utilization of organizational capabilities: as performance management systems focus on these elements primarily, so it needs to be highlighted, as it is important in defining the vision and achieving the elements at the first two levels.

The first task of an organization is to define the strategy in each case, since the alignment of the individual areas can be linked to the strategy and can be achieved based on the goals set out in the strategy. In the life of public service organizations, this is a priority process, as each sector has not only different goals, but also has a different value system. I have already mentioned that performance management system should be applied in the public sector. For the selection, this method helps the target hierarchy described above. Important to emphasize that the recommendation is to choice a system that proposes an objective evaluation and, in particular, it has a crucial role to pay attention to risk reduction as well. Because of the special nature of public sector, as it has a much wider range of customers it is characterized by risk aversion.

In my research I collected the most commonly used methods in these areas and in the following part, these methods are introduced.

3 Performance evaluation methods applied by public service organizations

Since, performance management system is primary match to the target hierarchy; there are features that can be applied to all methods. The first column of Table 1 contains these elements. However, the characteristics of each organization are heterogeneous (size, resources, geographic location), so the appropriate method must be associated with this. In addition, each procedure has novelty content, so in the last column of the table contains those differences that represent an advantage for the organization when selecting a system.

Characteristics	Methods	Novelties
Future oriented Effectiveness	BSC	Breakdown of organizational strategy to individual level
Efficiency Main element is strategy	EFQM/CAF	Cyclical innovation projects can be developed
Relationship between organization and individual	SZTÉR	Framework model applied in the public sector / administration
High level of compliance	HOSHIN Management	Focuses on critical processes, system development PDCA cycle
Show multiple areas at one time	Performance Prizm	Ability to multi-purpose optimization
Simultaneous use of qualitative and quantitative indicators	10 probes	Qualified criteria system

Table 1 Introduction of performance evaluation methods with special regard to the public sector [Own edition, based on Veres-Somosi and Hogya (2011), Czegledi (2011) and Wimmer (2000)]

By collecting the methodologies, my goal was to examine the methods applied in the public sector. In addition, I also came up with the novelty content, that should contribute as much as possible to the goals defined in the Figure 1.

It can be stated that the application of all methods has advantages and disadvantages, so no one can be said to be the best, but there are special sectors that prefer a particular method. My research is in the health sector and within the hospitals, therefore, in order to substantiate my hypothesis, I sought the answer to the question of how some hospitals prefer to use performance assessment methods in Hungary. The importance of this can only be measured by what is best suited to objectively measure the results of the health sector. Perhaps this is the sector where many factors need to be taken into account, as variables may vary from patient to patient. There are factors that need to be tackeld with highest priority and quantified in a later research (Govindarajan and St Gupta, 1985).

Human capital: Here we can express the quantity and qualification of employees that are needed for an institution to achive effective services Human capital is a priority because without this factor there are no services. So, if we examine the contribution of performance management methods the best is the BSC because strategy appears on individual levels, so an organization is also split into levels and linking to it is much more easier.

Capital is also important, but a public service provider works with a specific framework and here the main target is not the profit maximization but the economical operation. It should be mentioned that there are costs for the introduction and maintenance of each system, so it would be difficult to generate comparability based on this factor (Davis and Albright, 2003).

Time: The last is the time, because in every process a kind of optimization has to be carried out, especially in a health care unit, because in many cases life can also depend on this factor. BSC also focuses on this element, but in this respect, the cyclicity of EFQM can also be effective (Whitley, 1999).

I examined the performance management systems of seven Hungarian hospitals through web content analysis and interviews. I was primarily looking for the performance management and methods used by each institution. The results of this research supported the information in Table 2. The health care institutions were very heterogeneous, as I also used the methodology applied in the county town and in the institutions of smaller cities. The size and location of the institution is significant because it has priority in setting goals, since it is important how many people use the service. (Musinszki, 2016). My sample was a small sample, the results are shown in Table 2. Research finds that Balance Score Card is the most commonly used method of health care institutions, as it can break down the organization to individual levels so that it can create both a quality and quantity indicator system that provides a true picture of the institution and the developments based on them.

Hospital	**Size**	**Method presented and applied in the strategy**
Miskolc	County hospital	Balance Scorecard base
Zirci Hospital	Small town hospital	Individual performance reviews, there is no specific data on organizational evaluation

Csornai Margit Hospital	Small town hospital	Balance Scorecard base
Szent Raffael	County hospital	Balance Scorecard base
Szent Pantelon	Surgery institute	Balance Scorecard base
Bugát Pál	City hospital	Balance Scorecard base
Szent János	Joint hospital	There is no public interest information, but its nature shows Balance Scorecard base

Table 2 Methodology applied to the examined institutions [Own edition based on websites and strategic statements of institutions]

It is worth mentioning that during the international outlook, I met a strategic statement by many institutions that prefer this method. Balance Scorecard has typically been used in the public service sector since the turn of the millennium, its success being a management tool that takes into account the company's non-financial performance alongside financial indicators. In addition, it focuses on engaging with customers and considers the pursuit of internal operations and development as essential. It also focuses not only on past events, but also on future opportunities (Voelker, Rakich and French, 2001).

It is worthwhile to support the 4 pillars of BSC with indicators that can help us in designing an institution's performance management system and address the three elements mentioned above, such as human capital, capital and time. I defined this as the next milestone in my research, where I will name the metrics and work out an effective index system.

4 The appearance of social innovation in a public service organization

It can be stated that every healthcare institution is trying to adapt to the environment, it also appears in its performance management. However, there are limitations, and there are a number of areas that are not only significant in the life of an organization, but also in meeting social needs. The role of social innovation is also significant, so the next matrix presents the practical use of social innovation in the sphere. It should be noted, that the definition background of social innovation is very diverse, so it is also important to clarify it. Figure 2 shows this.

Figure 2 Elements of Social Innovation [Own edition based on Pol (2009), URBACT (2015) and Kelly (2008)]

This conceptual structure is well suited to the target hierarchy described earlier. We can highlight three areas that a public service organization may be affected by social innovation activities (social compliance, efficiency of operating conditions, learning and development), and formulated five elements to help develop these areas and introduce social innovation

processes. and its organization. In the next relationship matrix (Figure 3), we can see which area is displayed.

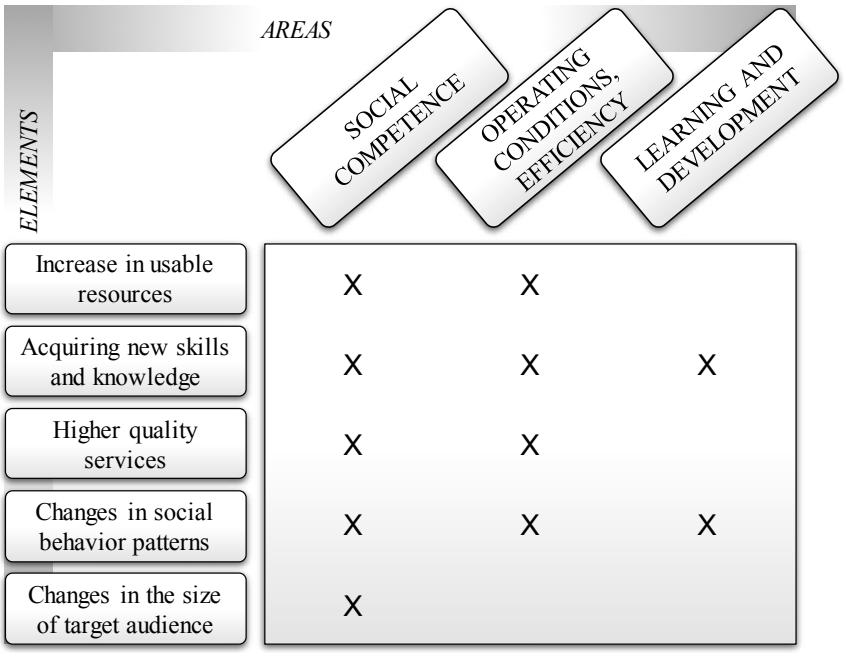

Figure 3 Matrix of social innovation exploitation in the public sector [Own edition based on Kocziszky, Veres-Somosi and Balaton (2015)]

Measuring social innovation is difficult because this process is reflected in the activities of each organization. However, if I want to find indicators in a health care facility where measurability can be defined, the five elements mentioned above can be used. I think the most important goal, as shown in Figure 3, is social compliance, as these activities are created for the sake of social well-being and satisfaction, but if we carry out a more detailed study, many indicators and elements can also affect this area not shown in Figure 3 (Kattel et al, 2013 and Kazmer, 2018).

5 Summary, results

Since there is no unified performance management system, I consider it worthwhile to develop an integrated system that will help to effectively evaluate the healthcare sector. There are also differences between institutions within the sectors but I consider that such a model provides an opportunity to integrate these individual features. Based on research the four aspects of Balance Scorecard system have proven its effectiveness in evaluating these institutions. I believe that the basics of the method are good, but there are elements that can be inserted based on previous gathered knowledge and defined target hierarchy.

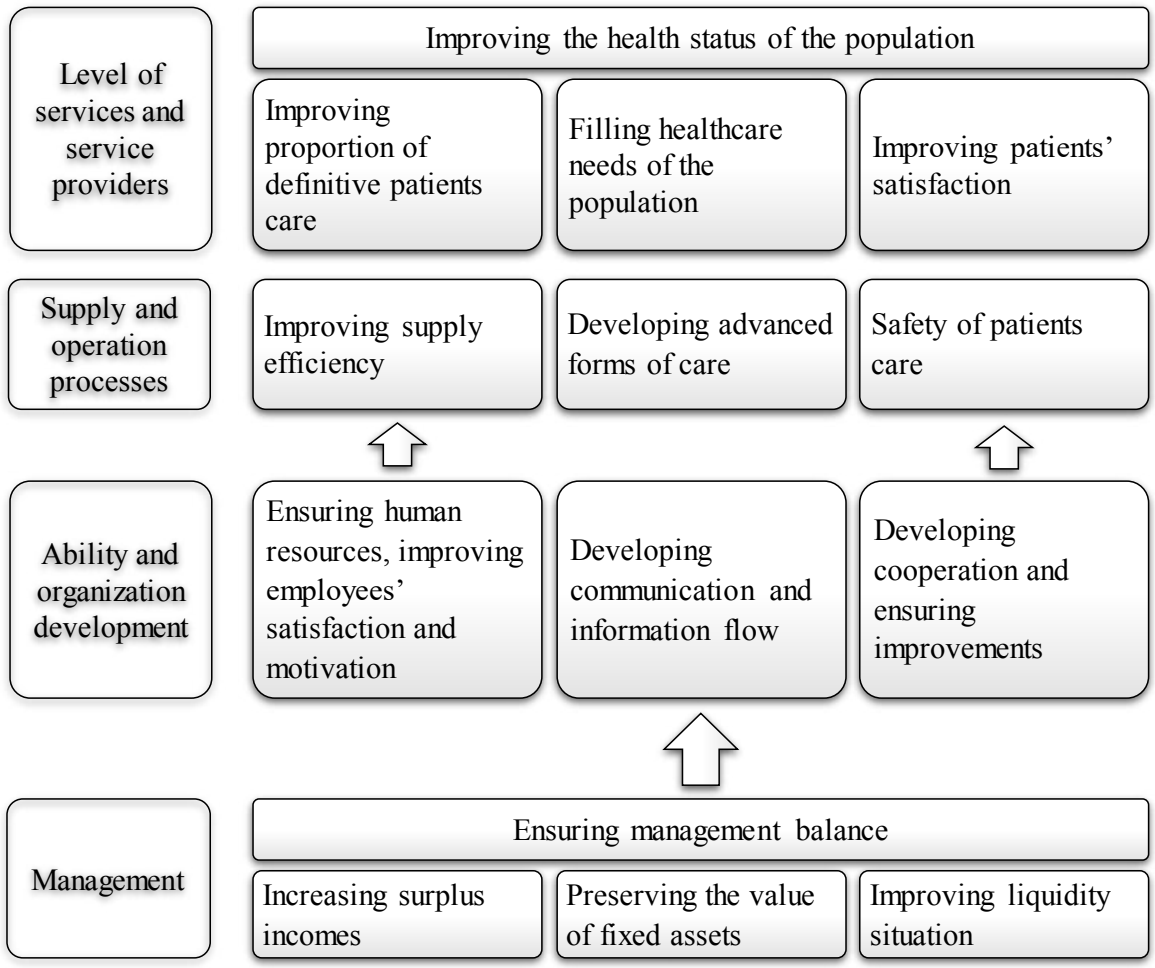

Figure 4 Strategy map of health care institution [Own edition based on websites and strategic statements of institutions (Bugat 2019, Mészaros2014, Nagy 2015, Winiczai 2017, Versmes2015)]

Additionally, I consider it useful to design strategy maps as this information can contribute to the formulation and implementation of successful application of integrated systems. Based on the aforementioned, I have prepared a strategy map on the basis of investigated institutions', which is intended to facilitate my further research. This shows that it is very difficult to plan in such a specific sector and how many elements need to be taken into account in order for an institution to operate efficiently and effectively, while also meeting social needs.

My research presents results that contribute to the development of a single indicator system, which can be said to be effective in the performance management of a public service organization. It is important to pair the factors outlined in the Figure 1 with the selected power management system. Balance Scorecard-based performance management takes place in the institutions I examined. It can be stated that this is good because it keeps in mind the organizational strategy. In the process of strategy planning, the organization can prioritize the organization, including the aforementioned time, human resource planning, and the time of the processes. I believe that by comparing this information, the link between the target hierarchy and the introduction of the BSC system is significant, as the introduction of this system will make the service more efficient. The lean approach helps in the process development and process time reduction, can utilize the organizational capabilities in the right way, and can manage economically limited resources. In my further research, based on the strategy map

shown above, I would like to focus on the development of a system that, despite the specificity of the organization, will be effective and will be a replacement in this area.

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References

Bugat, P. K. (2019). Quality Policy and Mission Statement (In Hungarian: Minőségpolitika és küldetésnyilatkozat), [Online]. Available at http://www.bugatpal.hu/index.php/magunkrol/minosegpolitika-es-kuldetesi-nyilatkozat [cited 19-02-2019].

Csath, M. (2016). 'Közintézmények stratégiai menedzsmentje'. *Államtudományi Műhelytanulmányok*, 14, pp. 2-9.

Czegled, L. (2011). Minőségmenedzsment, [Online]. Available at: http://www.tankonyvtar.hu/hu [cited 20-10-2018].

Davis, S. and Albright, T. (2004). 'An investigation of the effect of Balanced Scorecard implementation on financial performance'. *Management Accounting Research*, 15 (2), pp. 135-153.

Govindarajan, V. and St Gupta, A. K. (1985). 'Linking Control Systems to Business Unit Strategy: Impact on Performance'. *Accounting, Organizations and Society,* 10 (1), pp. 5 l-66.

Horvath, L. (2016). '*Az innováció-kutatás általános tudáshátterének áttekintése'*. Budapest: ELTE PPK. pp. 6-22.

Kaplan, R. S. and Norton, D. (2002). *A Stratégia Központú Szervezet – Hogyan lesznek sikeresek a Balanced Scorecard vállalatok az új üzleti környezetben?* Budapest: Panem.

Kattel, R., Cepilovs, A., Drechsler, W., Kalvet, T., Lember, V. and Tonurist, P. (2013). 'Can we measure public sector innovation?*' LIPSE Project paper. WP 6 Social innovation indicators,* pp. 1-15.

Kazmer, T. (2018). Szent Janos Hospital and North-Buda Joint Hospitals – Organizational and Operational Ruls (In Hungarian: Szent János Kórház és Észak-budai Egyesített Kórházak – Szervezeti és Működési Szabályzat), [Online]. Available at: http://www.janoskorhaz.hu/assets/2_1_szmsz.pd [cited 06-11-2018].

Kelly, A. E., Lesh, R. A. and Baek, J. Y. (2008). *Handbook of Design Research Methods in Education. Innovations in Science, Technology, Engineering and Mathematics Learning and Teaching*. New York: Taylor & Francis.

Kocziszky, G., Veres-Somosi, M. and Balaton, K. (2015). 'Characteristics of Measuring Social Innovation (In Hungarian: Társadalmi innováció mérésének sajátosságai)'. *Proceedings of 'Balance and Challenges' 9th International Scientific Conference'*, Miskolc, Hungary, pp. 288-302.

Kocziszky, G. and Veres-Somosi, M. (2016). 'Közszolgálattó szervezetek hatékonyság növelésének lehetőségei'. *Észak- Magyarországi Stratégiai Füzetek*, 13 (2), pp. 41-56.

Meszaros, L. (2014). Szent Pantaleon Hospital / Clinic Dunaujvaros – Organizational and Operational Rules (In Hungarian: Szent Pantaleon Kórház- Rendelőintézet Dunaújváros – Szervezeti És Működési Szabályzat), [Online]. Available at http://www.pantaleon.hu/kozerdeku/SZMSZ%20-%202014.pdf [cited 10-02-2019].

Molnar, V. and Kerchner, A. (2016). 'Application Possibilities of Mean Management in the Public Sector (In Hungarian: 'A lean menedzsment alkalmazási lehetőségei a közszférában')'. *Proceedings of the conference 'Technical Science in the Nothern Hungarian Region,* Miskolc, Hungary, pp.425-432.

Musinszki, Z. (2016). 'Innovations and cost systems trends and ways in the cost accounting'. *Organizational and economic mechanisms of development of the financial system*. Riga, Latvia: ISMA University, pp. 209-219.

Nagy, L. (2015). The Dr. Albert Kenessey Clinic – Strategic Document 2016-2022 (In Hungarian: A Dr. Kenessey Albert Rendelőintézet – stratégiai dokumentum 2016-2022), [Online]. Available at: http://kenessey.hu/kozadatok/strategia [cited 15-10-2018].

Pol, E. and Ville, S. (2009). 'Social innovation: buzz word or enduring term?' *The Journal of Socio-Economics*, 38 (6), pp. 878-885.

State Audit Office of Hungary. (2015). Jelentés a központi alrendszer egyes intézményei pénzügyi és vagyongazdálkodásának ellenőrzéséről – Zala Megyei Kórház, [Online]. Available at http://www.zmkorhaz.hu/doc/nyilvadat/aszellenorzes2015.pdf [cited 21-10-2018]

State Audit Office of Hungary. (2011). Jelentés Miskolc Megyei Jogú város Önkormányzata pénzügyi helyzetének ellenőrzéséről (43/3), [Online]. Available at: https://asz.hu/storage/files/files/%C3%96sszes%20jelent%C3%A9s/2011/1139j000.pdf?ctid=730 [cited 16-10-2018].

URBACT II Capitalisation (2015). *Social innovation in cities*. Apr. 2015.

Veres-Somosi, M. and Hogya, O. (2011). '*Teljesítménymenedzsment*.' Budapest: Nemzeti Tankönyvkiadó.

Vermes, T., Varsanyi, A., Valler, I. and Horvath, S. (2015). Zirc Erzsebet Hospital / Clinic – Development Plan 2015-2020 (In Hungarian: Zirci Erzsébet Kórház / Rendelőintézet – Fejlesztési terv 2015-2020), [Online]. Available at https://www.zirckorhaz.hu/?page_id=1000 [cited 12-10-2018].

Voelker, K. E. , Rakich. J. S. and French, G. R. (2001). 'The Balanced Scorecard in Healthcare Organizations: A Performance Measurement and Strategic Planning Methodology'. *Hospital Topics*, 79 (3), pp. 13-24.

Winiczai, Z., Abraham, P. and Nemeth-Borsodi, I. (2017). Strategic Goals for the Year 2018 in the Csornai Margit Hospital (In Hungarian: 2018. évi stratégiai célok a Csornai Margit Kórházban), [Online]. Available at: http://www.margitkorhaz.hu/pdf/2018_evi%20strategia_terv.pdf [cited 16-10-2018].

Wimmer, A. (2000). 'A vállalati teljesítménymérés az értékteremtés szolgálatában, a működési és a pénzügyi teljesítmény kapcsolatának vizsgálatában', [Online]. Available at: http://unipub.lib.uni-corvinus.hu/32/1/10_mht_wimmer.pdf [cited 25-05-2018].

Whitley, R. (1999). 'Firms, institutions and management control: the comparative analysis of coordination and control systems'. *Accounting, Organisations and Society*, 24 (5/6), pp. 507–524.