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HOW ORGANIZATIONAL INNOVATIONS HELP MANAGERS TO IMPROVE QUALITY OF THEIR WORK: AN EMPIRICAL STUDY

Abstract: *The paper identifies the influence of organizational innovations in work of managers by means of empirical research. Four sets were identified in the paper and they present the basis for reviewing the influence of organizational innovations. The set* V_1, ... V_i,...V_n *defines types of organizational innovations, the set* X_1, ... X_j, ... X_m *managerial activities, the set* Y_1, ... Y_k, ... Y_o *types of changes which can be caused by organizational innovations and the set* Z_1, ... Z_l, ... Z_p *determines hierarchical levels of management. The goal of the paper is to identify which types of organizational changes cause particular changes at individual level of management and how they influence work of managers at these hierarchical managerial levels. The research was carried out in a selected basic set of companies consisting of Slovak medium sized and large companies performing in the area of industrial production. The basic method which is used is sociological interrogation. We find that the implementation of organizational innovations demonstrable influence managerial work at all levels of management. We identified the most frequently implemented organizational innovations in Slovak medium sized and large companies, innovations with the highest intensity of changes and managerial activities in which was the impact of organizational innovations is mostly seen.*

Keywords: *Organizational innovation, Managers´ work, Influence on managers´ work, Quality*

1. Introduction

Introduction should provide a review of recent literature and sufficient background information to allow the results of the paper to be understood and evaluated. It should clearly explain the nature of the problem, previous work, purpose and contribution of the paper.

There are a various factors that influence the work of managers. Innovation, ability to implement them successfully and the efficient management of the innovative capabilities undoubtedly considered as one of the most important motivation for competitive power. A necessary condition of successful management of organizational change is communication at all levels of management and mutual communication throughout all departments. By respecting company financials and other resources, as well as placing importance on the external reviews and critical thinking in achieving the overall goal through the implementation of organizational innovation are crucial steps to

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reaching the desired level of success. The entire management process, based on how these rules effectively influence the organizational innovations managers, has a positive effect on the company's economic and financial performance supporting competitiveness and sustainable growth.

Businessmen and managers working under pressure in a competitive environment are thought to constantly increase company performance. From this point of view, the adoption of organizational innovation can be critical to gain a company's competitive advantage. (Prasad & Junni, 2016). In 2011, the European economic and social committee approved a document titled "Innovative places of employment as a source of productivity and high quality working places", which states that it is necessary to understand the importance of innovation and the ways in which they are carried out, especially at the level of companies and organizations. Innovation is a sustainable way to change organizational activities and support improvement of productivity and work quality. Operative procedures, work organization, working methods and tools, physical working environment, professional skills and working processes, management and leadership belong to basic areas in which improvement can be achieved. According to Slater (1999) the most important changes in the environment of organizations are in their structure, systems and organizational culture. According to Laforet (2011) this change comes in the form of corporate strategy, management practices, organisational structure and marketing. OECD (2005) states that organizational changes related to implementation of a new organizational method in company business practices, workplace organization or external relations. According to Fey, Shipton, West, and Patterson (2015) these make up four main areas, i.e. development of new products and services, production methods and procedures, production technologies and administrative changes. As Do, Yeh and Madsen (2016) cites, fundamental changes related with innovations made to existing practices in the activities of an organization. Lopez-Valeiras, Gonzalez-Sanchez, & Gomez-Conde (2016) desribe effects of the interactive use of management control systems on process and organizational innovation. All the above mentioned views as well as opinions obtained during personal interviews with managers of the selected set of companies, were taken into consideration when creating our own organizational innovations set of proposals (V), the set of changes in work of managers (Y), which may be activated during execution of managerial activities (X) at all levels of management (Z).

The main focus of the paper is to identify the impact of these organizational innovations on managerial responsibilities by means of empirical research. The types of organizational changes that cause particular changes at individual levels of management and how they influence work of managers at these hierarchical managerial levels set in the average medium sized and larger Slovak companies in the industrial production field. The basic method is sociological interrogation and interviews with the managers of these companies. The results or findings can serve as an assumed way to identify the most important changes in terms of task sizes and the successful management in the process of practical realization in the execution of individual managerial functions at all levels.

2. Theoretical determination of surveyed topic

2.1. Characteristic and importance of organizational innovations

A lot of authors have dealt with the topic of organizational innovations so far. There is a frame of many definitions which determine their basis from different points of view. Battisti and Stoneman (2010) present that they involve new management practices, new organization, new marketing concepts and

new corporate strategies. Armbruster, Bikfalvi, Kinkel and Lay (2008) speaks about changes in the structure and processes of an organization due to implementation of new managerial working concepts and practices. Official definition of OECD (2005) defines them as implementation of a new organizational method in the business practices, workplace organization or external relations. Although, according to Garud and Turunen (2017) even as the speed, scope, and complexity of innovations have intensified, left under-theorized are the forums within which innovations unfold – organizations.

Their importance is in cost reductions, increase of flexibility optimization of capacity or improvements in quality (Tang, Pee & Iijama, 2013). As Lopéz-Valeirazstates (2016), it concerns non-technological innovation, which deals with people, not with technology. It regards implementing and reshaping companies´ procedures, regarding internal organizational and external relations. It is necessary to consider size, education of the workforce and geographic scope as firm-level attributes. Small and middle sized companies in comparison to large companies have lower capital and insufficient experience so they often build alliances, trade networks and groups. It helps them to improve their innovation abilities. But innovation not only allows adaption to changes in companies´ environments, but also provides means to actively drive and shape such a change (Ganter & Hecker, 2014). Improving innovations skills is the most relevant objective in adopting any organizational innovation. Two objectives are closely related to innovations in workplace organization, namely reducing response time and cost (Meroño-Cerdán & López-Nicolás, 2017).

As Laforet concludes (2013) organization innovation focuses on innovation at the strategic level of the company and leads to strategic consequences or outcomes that have an impact on the whole organization. He created a model of organizational outcomes and divided them into positive outcomes, consisting of operational excellence or efficiency, productivity, working environment, financial performance (increase market share, profits and turnover), and negative outcomes including operating outside core competency and adverse environmental effect.

Innovations present a crucial component of business strategy, but it seems to be difficult to manage. To plan organizational initiatives around innovation requires a firm grasp of the innovation process (Desouza et al., 2009).

2.2. Work of managers in relation to organizational innovations

Hierarchy of management consists of three basic levels, i.e. top management (CEO/executive), middle-level management and line management. Basic functions which are executed at all the managerial levels include planning, organizing, leadership and control. Each of these positions is represented by managers who have to meet quality demands, which correspond not only with their knowledge, abilities and skills but personal characteristics as well. An important role is played by managerial practices promoting organizational trust, reciprocity, and a sense of organizational justice generating worker satisfaction, commitment, and effort. The result of this managerial behavior is enhancing growth, productivity, profitability, and earnings, while limiting costly problems such as absenteeism, turnover, accidents, defects, and theft (Crowley, 2016).

CEOs and their top management teams have the ultimate responsibility to set strategic directions, make strategic decisions and create organizational cultures that foster or inhibit innovation (Kang, Solomon & Choi, 2015). The ability of CEOs to conduct organizational change directly influences company performance. The ability of strategic change leadership is the reflection of managing directors' quality and its absence may be associated with reduced organizational performance (Sirén, Patel & Wincent, 2016).

Kossek, Ollier-Malaterre, Lee, Pichler and Hall (2016) revealed four dimensions of organizational support. Two are cultural - senior management support and discourse on career penalties and two structural - adaptation of human resource systems and organizational diffusion.

Capabilities of managers involve the capacity to perform not only physical but also mental activities. Heterogeneity of these cognitive managerial capabilities may contribute to differential performance of organizations under conditions of change (Helfat & Peteraf, 2015). Psychological skills in management such as confidence, perseverance, the ability to persuade, endurance, stress – resistance and self-confidence are important for success in business. This attitude may bring a lot of benefits such as process improvements, significant cost savings, reduce waste through increasing activity coordination, etc.

2.3. Economic and financial aspects of organizational innovations

Sustainable organizational development can help enterprises speed up to analyse, identify and improve their businees. Many of new emmerging management concepts as anti-bribery management system or corporate social responsibility represent innovation potential of an organizational structure and processes in new industrial era. It affects also routine activities of managers and all other employee (Závadská & Závadský, 2018). However, as Bigliardi (2013) state, innovations influence financial performance. Organizational innovations often require diverse expertise. A company undertaking and financing the innovation, however, must possess internal knowledge of the existing system as it is essential for coordination and assessment of outcomes (Robertson, Casali & Jacobson, 2012). Finance is one of the most powerful drivers of organizational innovations.

Business innovation activities including organizational innovations can be funded by a wide range of sources of finance, either externally or internally. Companies usually prefer internal sources of finance to external ones which also corresponds with some theoretical approaches to capital structure – mainly the pecking order theory – as shown in several types of researches (mentioned e.g. by Baker, Singleton & Veit, 2011). External sources, particularly debt ones, are virtually more accessible to companies which are not financially distressed and prove to be less of a financial risk. This very often holds true for larger firms. Debt financing thus appears more suitable to finance innovations including organizational structures in mature and larger companies with solid cash flow streams and high-quality collateral options. Since smaller companies are regarded crucial to the innovative progress of each economy and, concurrently, they are often confronted with different problems constraining their innovation activity (including the lack of appropriate capital) which is one of the most important strategies of their competitiveness, they should be supported by programs provided by the public sector (Gu & Lundvall, 2016). Actually, the better availability of bank loans may stimulate companies to innovate. The volume of capital required to finance organizational innovations, however, substantially depends on their types. Innovations introducing new organizational methods, innovations of organizational structure and organizational culture may generally be less dependent on sources of finance, whereas innovations at employees' workplace, innovations of intra-organizational and external communication and innovations of information system supporting management activities tend to require more funding, mainly when they require considerable investments in new hardware, work equipment or significant workplace reconstructions.

Availability of certain sources of finance for innovation is affected by many different factors. As mentioned above, one of most important is the firm´s size. In developed economies, private equity and venture capital funds usually offer capital for these

companies, often together with know-how to support their high potential realization. As Acharya, Gottschalg, Hahn and Kehoe (2013) confirm, such funds add an economic value to companies they invest in as they improve their corporate governance, monitor managers and provide superior access to human capital. In this way, these alternative sources of capital may effectively support implementation of organizational innovations in smaller firms.

Generally, financial markets play a key role in driving economic growth through their ability to spur innovation, namely "by allocating capital to firms with the greatest potential to implement new processes and to commercialize new technologies" (Kerr & Nanda, 2015). Organizational change is also more likely under private ownership. Conversely, public companies choose more conventional projects, their managers care more about current earnings, they find it difficult to pursue complex projects that the market does not appear to understand well (Ferreira, Manso & Silva, 2014).

The positive economic impact of organizational innovations at a company level, particularly in terms of improvement of economic performance, has been documented by extensive research (Evangelista &Vezzani, 2010). They also confirm that organizational innovations play an important role in driving company economic performance and that "changes in the organizational structure and operational functioning of firms might represent an autonomous and effective innovation mode and that such an innovation strategy appears to be more rewarding than pure product or process oriented strategies". Laforet (2013) also underlines that organizational innovations have great impact on SMEs, particularly small ones, in terms of improving their profit margin and competitiveness. Based on their own study, Bolívar-Ramos, García-Morales and García-Sánchez (2012, p. 351) conclude that organizational innovations are a strategic factor which enable growth and the creation of companies' wealth and their renewal over time, its adaptation and change to meet new market demands and help companies "to achieve a better response from the environment". Armbruster, Bikfalvi, Kinkel and Lay (2008, p. 645), proving the importance of organizational innovations for companies' competitiveness and performance, argue that organizational innovations present an immediate source of a company's competitive advantage since they significantly affect performance with regard to productivity, lead times, quality and flexibility. Mazzanti, Pini and Tortia (2006) add an aspect of human resources to the organizational innovations and their relation with company performance and argue that new practices (referred to as high-performance practices) which are often initiated by managers could be more effective if employees are actively engaged. They also underline that the mere introduction of a new technology will not result in better performance without organizational innovation and new human resources management practices.

3. Empirical research

3.1. Data collection

In the process of data collection, the most important is their availability, validity and financial costs. All these factors influence research quality and results. In the paper both primary and secondary sources of data collection are used. Secondary sources are presented by data from SR Statistical Office, as well as specialized domestic and foreign literature and domestic and foreign scientific papers.

The method of sociological interrogation by means of a questionnaire was used to obtain primary sources of information. Its content is a determined set of organizational innovations and types of changes which individual innovations may activate in work of managers. With the aim to identify and determine the sets of organizational innovations and types of changes in a better

way, we carried out already mentioned comparative and content analysis of literary sources and as the next primary source a method including personal interviews with managers of the basic set of companies was used. All these facts created the main assumption for the questionnaire creation which was aimed at managers at all management levels. The data we obtained were consequently processed, evaluated and based on it we came to some conclusions and let some space for discussion.

3.2. Representativeness of the sample

The paper concentrates on a set of companies represented by Slovak medium sized and large companies performing in the area of industrial production. The criteria which we take into account included:

- size (medium sized and large companies),
- performance (SR territory),
- industry (due to classification of SK NACE Rev. 2 section C – Industrial production),
- active performance – (according to the data of Statistical office it concerns the subject which had employees, incomes or investment in the reference period),
- profit orientation.

Based on the data of the Slovak Republic Statistical Office there are 1016 medium sized and 280 large companies performing in its territory. Due to the requirements of the research all the basic set was addressed. Cooperation was accepted by 80 companies. One important step in this case is verification of representativeness by means of χ^2 test. The basic characteristic is a company size. When considering this criteria, we will follow size categories determined by European committee according to the directive no. 2003/361/ES. The summary of the results concerning actual situation of the number of medium sized and large production companies in Slovakia obtained from the Statistical Office is in the table 1.

Table 1. An overview of medium sized and large industrial enterprises number

	Medium sized enterprises	Large enterprises	Enterprises total
Basic set	1016	280	1296
Sampling set	46	34	80

After substitution of actual and predicted values into the formula we get the size χ^2, which in our case was 2.556. The size of this value is compared to the result which presents the data from statistical table when the level of latitude is 1 (2size - 1) and level of significance 0,05 (so prediction of 95% probability of representativeness). The result is valued 3.841, and it is valid, that if the χ^2 value is lower than the data from the statistical table, the existing set is representative, and it is valid also in our case.

3.3. The results of empirical research

Based on comparative and content analysis of literal sources, the opinions of different authors and personal interviews with managers of industrial companies were used to define four sets of elements:

- set V_1, ... V_i,...V_n, determined by types of organizational innovations shown in the table 2,
- set X_1, ... X_j, ... X_m determined by managerial activities/functions shown in the table 3,
- set Y_1, ... Y_k, ... Y_o represented by types of changes in work of managers, which can be activated by individual organizational innovations shown in the table 4,
- set Z_1, ... Z_l, ... Z_p, which determines hierarchical levels of management shown in the table 5.

Table2. Set *V*: Type of organizational innovation

Set V	Type of organizational innovation
	New organizational method
V_1	Implementation of new organizational method on one organizational unit level
V_2	Implementation of new organizational method on corporate level
V_3	Implementation of new organizational practices at employee's level of employee
V_4	Implementation of new organizational practices at manager's level
	Innovation of employee workplace (not technological)
V_5	Increasing the availability of work equipment (PC, printer, OSH equipment ...)
V_6	Change in layout of workplace
V_7	Creating open space areas
V_8	Creation of co-working spaces
V_9	Equipment of workplace by smart devices
V_{10}	Changing the colour of walls
V_{11}	Integration of fauna and flora into the workplace
V_{12}	Creation of relax zones
	Innovation of internal organizational communication (internal stakeholders)
V_{13}	Implementation of an automated system for sharing information for internal stakeholders
V^{14}	Implementation of an automated notification system for selected groups of internal stakeholders
V_{15}	Creation of a communication strategy for the internal stakeholders
V_{16}	Usingthemoderncommunicationplatformsforcommunicationbetweeninternalstakeholders (LinkedIn, Twitter, Facebook, WhatsApp ...)
	Innovation of organization structure
V_{17}	Leaner organizational structure – reducing the number of hierarchical levels of management
V_{18}	Leaner organizational structure – job cuts
V_{19}	Leaner organizational structure – reducing the organizational units due outsourcing services or activities
	Innovation of organization culture
V_{20}	Creating uniform corporate design (logo, clothing, forms ...)
V_{21}	Creating incentive program
V_{22}	Creating the strategy of care of employees
	Innovation of external organizational communication (external stakeholders)
V_{23}	Implementation of an automated system for sharing information for external stakeholders
V_{24}	Implementation of an automated notification system for selected groups of external stakeholders
V_{25}	Creation of a communication strategy for the external stakeholders
V_{26}	Usingthemoderncommunicationplatformsforcommunicationwithexternalstakeholders (LinkedIn, Twitter, Facebook, WhatsApp ...)
	Innovation of information systems to support management activities
V_{27}	Implementation of corporate information system ERP
V_{28}	Implementation of Business Intelligence (BI)
V_{29}	Implementation of Manufacturing execution systems (MES)
V_{30}	Implementation of workflow information system
V_{31}	Implementation of information system for content management

Table 3. Set *X*: Managerial activities

Set X	Managerial activities
X_1	Planning
X_2	Organizing
X_3	Leadership by organizational communication
X_4	Leadership by employees´ motivation
X_5	Leadership by delegation
X_6	Leadership by directives and orders
X_7	Checking
X_8	Decision-making

Table 4. Set *Y*: Changes in managerial work

Set Y	Changes in managerial work
	Planning
Y_1	Reduced time of planning
Y_2	Reduced number of planning activities
Y_3	Improving traceability compliance plans
	Organizing
Y_4	Clear allocation of responsibilities and competences
Y_5	Reduced time for reallocation of human resources in organizational innovation
Y_6	Faster coordination of employees at organizational changes
Y_7	A higher number of teams and teamwork
	Leadership by organizational communication
Y_8	Reduced time for transferring information
Y_9	Reduced redundant information
Y_{10}	Increasing the number of suggestions for improvement
Y_{11}	More shared knowledge
	Leadership by employee motivation
Y_{12}	Increasing motivation of employees
Y_{13}	Increasing the transparency of the reward system
Y_{14}	Increasing employees' satisfaction
Y_{15}	Reduced number of conflicts
	Leadership by delegation
Y_{16}	Increasing the rate of delegation
Y_{17}	Elimination the workload of managers
	Leadership by directives and orders
Y_{18}	Removing of mobbing
Y_{19}	Reducing the time for the task execution
	Checking
Y_{20}	Reduced number of corrective and preventive actions
Y_{21}	A faster way of identifying causes of nonconformities
Y_{22}	Acceleration of adoption of corrective and preventive actions
Y_{23}	Elimination of error occurrence risk
	Decisionmaking
Y_{24}	Reduced time for decision-making processes
Y_{25}	Increasing availability of information in the information system
Y_{26}	Increasing complexity of reporting

Table 5. Set *Z*: Manager position in organization

Set Z	Manager position in organization
Z_1	Top management
Z_2	Middle management
Z_3	Low management

After the sets were determined, the respondents provided their position (Z), they selected organizational innovations (V), which were implemented in their company and allocated changes to innovations (Y), which were activated in their work (X).

Figure 1 presents the evaluation of the first identification question aimed at finding their position in the company (Z).

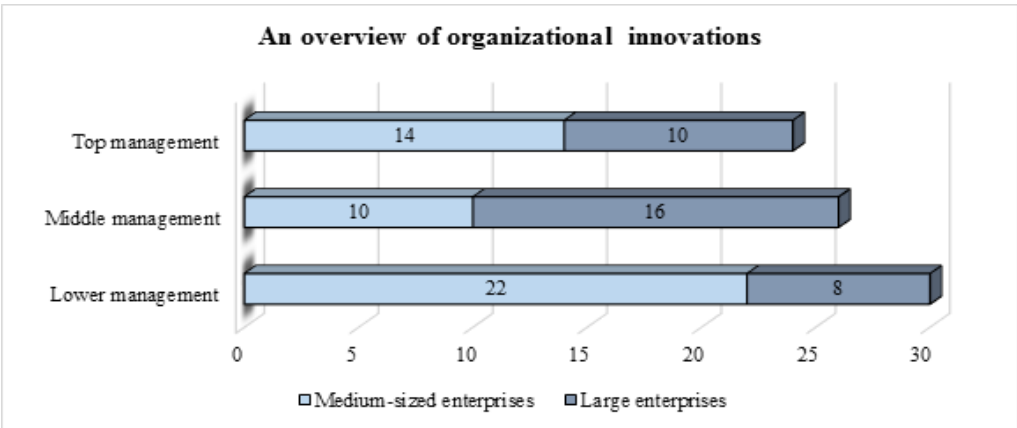

Figure 1. Representation of enterprises according to hierarchic level of management

As you can see, 24 respondents work in managerial position, 26 work in the middle level of management and the lowest level is presented by 30 managers taken from 58 % of medium sized and 43 % of large companies. The results of the evaluation is for both size groups collectively.

In the process of identifying the influence of organizational innovations and the presentation of the intensity of these in managerial work, three steps will be followed:

1) evaluation of the results from the perspective of organizational innovations (V)–utilization of these innovations under our conditions for the set of sampled Slovak companies and the presentation of the intensity of changes within the most frequently implemented organizational innovations,
2) evaluation of the results from the viewpoint of changes in work of managers (Y) – identifying the most intense changes in managerial work and formulation under the conditions these organizational innovations changes occurred,
3) evaluation of the results from the viewpoint of managerial activities (X) – identification of managerial activities in which the implementation of innovation was mostly registered and defining what innovations it concerns.

The results of the data we obtained are shown in the figure 2.

Figure 2. Research results overview - RRO

The description concerning the figure 2: the first column presents different types of organizational innovations (V), in the next columns, changes in managerial work are recorded (Y), changes recorded by managers after implementation of a particular innovation. The number which corresponds with changes, e.g. $12Y_1$, presents the number of responses of managers, so in this case 12 respondents recorded in the first innovation (V_1) the change Y_1. The last column summarizes the number of changes of a particular innovation (e.g. 108), and this also expresses their intensity. The last line shows a summary of all changes – separately (Y_1, Y_2, Y_3 ... Y_{26}).

The results from the point of view of organizational innovations (V)

Figure 3 presents evaluation of the first view, aimed at the identification of implemented organizational innovations in Slovak medium sized and large industrial companies.

Figure 3. Overview of organizational innovations (set V)

As you can see in the table 6 the most frequently implemented organizational innovations are:

- V_2 implementation of new organizational method on corporate level,
- V_{27} implementation of corporate information system ERP,
- V_4 implementation of new organizational practices at managerial level.

The data collected from the summary of the questionnaire results.

As to the intensity of changes (data from the last column of the RRO) which were activated by implementation of these innovations, their high intensity can be seen only in two innovations - V_2 and V_{27}, but in case of innovation V_4 it is not so high. High intensity can also be seen in the following innovations:

- V_{13} implementation of an automated system for sharing information for internal stakeholders,
- V_3 implementation of new organizational practices at the level of the employee,
- V_{29} implementation of Manufacturing execution systems (MES).

These results are marked in blue color in the last column ΣY_k of the RRO, and they will be used in graphic presentation of this situation according to the network model created by Pomffyová (2008). She understands it as utilization of conception of social networks (in company communication) and graphic presentation of elements (junctions) and their mutual interconnections (relations) by means of so called network model. This model shows connections among members of an organization and their mutual relations in the communication system as the result of company relations character (Pomffyova, 2008). Since we are interested in searching for the relation of organizational innovations and changes they activate in managerial work, we modify and adapt this model to our

conditions, based on how we develop our own scheme of this relation.

The set of five organizational innovations that has been determined will be classified in dependence on the size of change intensity. At each innovation we will concentrate on the changes that proved to be the strongest with values from 1 - 4, whereby 1 presents the highest and 4 means the lowest intensity. Here we follow the blue color lines in the RRO and the figure 4 presents extracted realtions.

Table 6. Determination of organizational innovations due to intensity of changes

Rank	Organizational innovation	Type of change in managerial work	Intensity of change	Level (1–4)
1.	V_2	Y_3	16	2
		Y_4	14	3
2.	V_{13}	Y_8, Y_{25}	16	2
		Y_1, Y_{11}	14	3
3.	V_{27}	Y_3	18	1
		Y_1, Y_4, V_8	12	4
4.	V_3	Y_{15}	16	2
		Y_4, Y_{12}	14	3
		Y_{13},Y_{14}	12	4
5.	V_{29}	Y_8	14	3
		Y_3	12	4

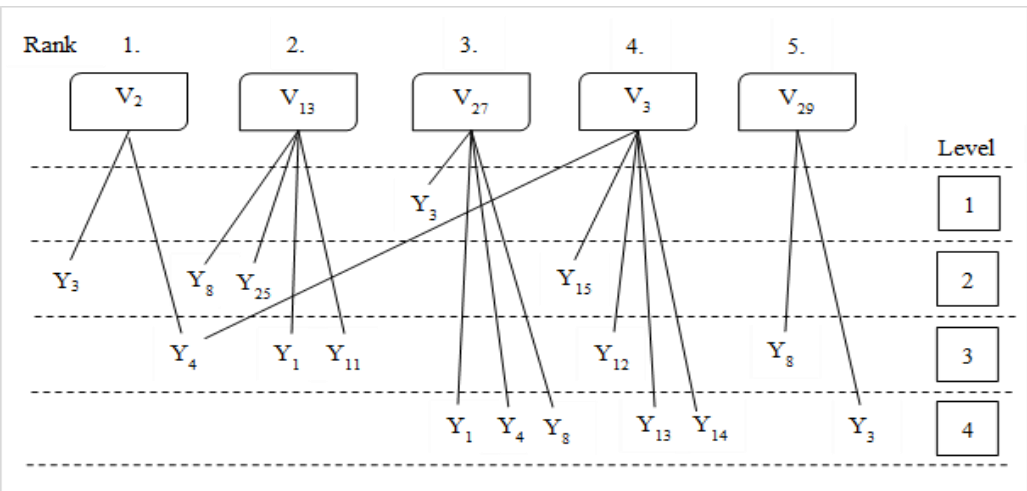

Figure 4. Overview of implemented organizational innovations: V → Y

After the results were graphed it was clear – from the organizational innovations perspective– which organizational innovations (V) activate particular changes in managerial work (Y) as well as showing their intensity. The higher value is a change in managerial work far from organizational innovation causing its activation (the higher level of the change) the lower is its intensity in relation to this innovation and vice-versa.

The results from the point of view of changes in managerial work (Y)

The same procedure is used in the evaluation of the second point of view, i.e. number of changes in managerial work, where we focus on the data in the last line ΣY of RRO, marked in yellow color. It is based on the selection of five of the most intensively visible changes which were activated by implementation of individual organizational innovations. The procedure is similar to the former case. At first we determine the order of changes due to their intensity as is shown in the table 7:

- Y_8 reduced time for transferring information (200),
- Y_3 improving traceability compliance plans (192),
- Y_{14} increasing the employees´ satisfaction (164),
- Y_4 clear allocation of responsibilities and competences (140),
- Y_{12} increasing motivation of employees (132).

Table 7. Determination of changes in work of managers due to its intensity

Rank	Type of change in managerial work	Organizational innovations	Intensity of change	Level (1–5)
1.	Y_8	V_{13}	16	3
		V_{29}	14	4
		V_{27}, V_{30}	12	5
2.	Y_3	V_1, V_{27}	18	2
		V_2, V_9	16	3
		V_{30}	14	4
		V_{29}	12	5
3.	Y_{14}	V_{22}	22	1
		V_{11}, V_{12}, V_{21}	18	2
		V_3, V_5, V_{10}	12	5
4.	Y_4	V_1	16	3
		V_2, V_3, V_4	14	4
		V_{27}	12	5
5.	Y_{12}	V_{21}	22	1
		V_{22}	18	2
		V_3	14	4

For each of these five changes we will concentrate more closely on determining the intensity of change of the organizational innovations and what is effectively the strongest. Five levels of intensity were defined as well (from 1 – 5, whereby 1 presents the highest and 5 the lowest intensity), since, in this case, in comparison to the former one the value higher than 18 was recorded. We then proceed from individual types of changes to corresponding organizational innovations. This enables identification of the impact resulting from their implementation.

The same principle is also applied in this case. The higher is a distance of organizational innovation (V) from the change in managerial work (Y) the lower is its intensity of influence. The result presented in the figure 5 is that organizational innovation in this case does not have such a big influence over the work of managers in comparison to innovations at levels with lower value.

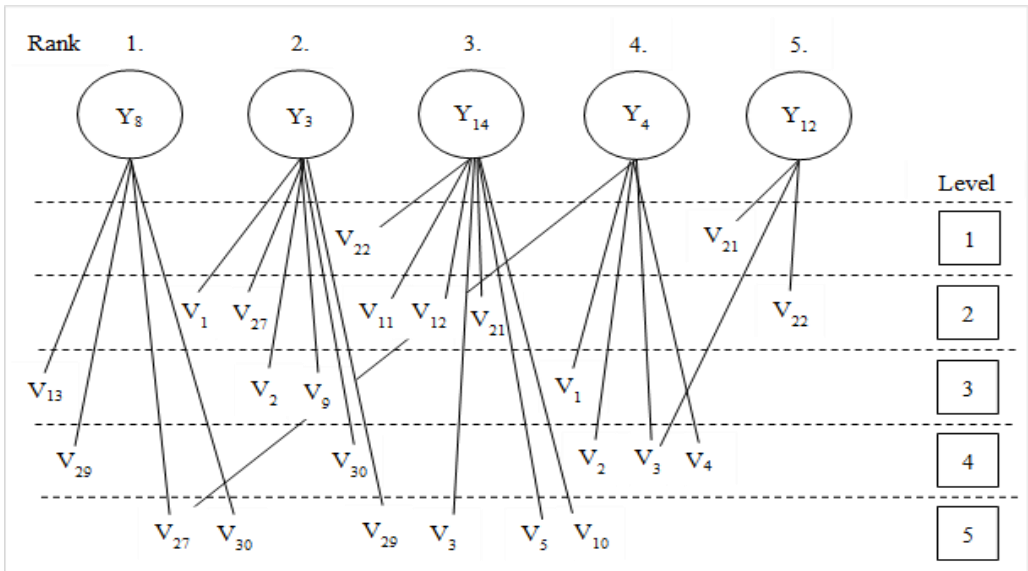

Figure 5. Overview of implemented organizational innovations: Y → V

Results from the point of view of managerial activities (X)

Obtained data are interpreted also from the managerial activities viewpoint. These activities were divided into eight categories which are marked by braces in the RRO. Since there is a different number of changes within one managerial activity we will work with their average values. The results are shown in the table 8.

Table 8. Overview of the results concerning individual managerial activities

Planning (X_1)	Organizing (X_2)	Leadership by organizational communication (X_3)	Leadership by employees´ motivation (X_4)	Leadership by delegation (X_5)	Leadership by directives and orders (X_6)	Checking (X_7)	Decision making (X_8)
Y_1 - Y_3	Y_4 - V_7	Y_8 - Y_{11}	Y_{12} - Y_{15}	Y_{16} - Y_{17}	Y_{18} - Y_{19}	Y_{20} - Y_{23}	Y_{24} - Y_{26}
115	82	105	103	43	54	63	91

The results from the data that implementation of innovations is mostly seen in planning (X_1), leadership by organizational communication (X_3) and leadership by employees´ motivation (X_4).

X_1 was mostly influenced by implementation of innovation V_1 implementation of new organizational method on one organizational unit level (intensity of changes equal to $18Y_3$) and V_{27} implementation of corporate information system ERP (the same intensity $18Y_3$), at X_3 the biggest influence was recorded by innovation V_{13} implementation of an automated system for sharing information for internal stakeholders (with intensity of changes $16Y_8$) and at X_4 to there were innovations V_{21} creating incentive program and V_{22} creating the strategy of care for employees (intensity of changes $22Y_{12}$ and $22Y_{14}$).

4. Discussion

4.1. Novelty of the research and its contribution for theory and practice

These results represent previously unclear facts concerning the current state of utilization of selected organizational innovation in conditions of Slovak medium and large production companies, which present unclear knowledge of their use, provide a comprehensive view of the changes in the work of the managers that are related to them and the intensity with which they appear. Based on the results obtained from the research, we can conclude that the implementation of organizational innovations demonstrable influence managerial work in different areas, at all levels of management. There are several findings resulting from the processed data. Most frequently implemented organizational innovations in conditions of Slovak medium sized and large companies include:

- V_2 implementation of new organizational method on corporate level,
- V_{27} implementation of corporate information system ERP,
- V_4 implementation of new organizational practices at managers' level.
- Innovations with the highest intensity of changes include:
- V_2 implementation of new organizational method on corporate level,
- V_{27} implementation of corporate information system ERP,
- V_{13} implementation of an automated system for sharing information for internal stakeholders,
- V_3 implementation of new organizational practices at the level of the employee
- V_{29} implementation of Manufacturing execution systems (MES).

If we look at implementation of organizational innovations from the point of view of intensity of changes the research results show that most frequently changes in companies are:

- Y_8 reduced time for transferring information,
- Y_3 improving traceability compliance plans,
- Y_{14} increasing the employees´ satisfaction,
- Y_4 clear allocation of responsibilities and competences,
- Y_{12} increasing motivation of employees.
- It also shows in the results that the total impact of organizational innovations is mostly seen in managerial activities:
- X_1 planning,
- X_3 leadership by organizational communication,
- X_4 leadership by employees´ motivation.

These findings can serve as a support tool for managers of other businesses who have decided to implement organizational innovations since they can help manage their strategic decision-making to help successfully support the implementation process, they expand current knowledge of managing changes in managers' work, help to avoid unnecessary management failures, they also provide an overview of new opportunities for other areas where businesses can decide to innovate, and can also be an inspiration for new areas of research.

4.2. Critical findings and barriers of the research

Based on these results we can come to a conclusion that implementation of organizational innovations depends on a type of a particular innovations, various changes influencing execution of selected managerial activities and in different intensities, but

finally it proves that the direct impact on the work of these managers. The results also point out to the diversity of findings considering the different point of view based on which the data was evaluated.

Since the work of managers is very diverse and the views on its content vary, in this research we have chosen to focus only on the performance of managerial functions. We have applied the narrower definition also in the case of the effects of organizational innovation when we focused only on positive effects in the work of managers. Examining the negative effects has not been part of our research, but we consider it appropriate to extend the examination of the issue also in this respect. Based on these facts, we have compiled our own set of organizational innovations and a set of potential positive changes in the performance of managerial functions in the company management system. This is the framework chosen by us, which can be expanded by other types of organizational innovation, as well as changes in the work of managers. Research was conducted through a questionnaire survey, which presents a tool of data collection often discussed by many researchers, as it involves the risk of false reporting, filling in by incompetent respondents, often also low returns. However, it is very often used in research, as it allows getting answers from spatially distant respondents within a short period of time. However, taking this into account and considering the aim and purpose of the paper, we have considered this form of data collection to be appropriate. The return of questionnaires may appear as a problem to be discussed. The questionnaire was completed by only 80 respondents out of a total of 1296 enterprises. Unfortunately, due to the current busyness and willingness on the part of companies, the return of the questionnaires from the statistical point of view was low, despite our efforts. Another fact remains that the findings are generalized to the entire basic set of companies. However, it is also necessary to take into account the specifics of individual companies. Every company should be able to assess their current situation with regard to their overall functioning, taking into account the limitations, capabilities and possibilities, and to proceed with the adoption of specific decisions accordingly.

4.3 Limitations and directions of future research

The paper focuses on examining the impact of selected organizational innovations and positive changes in the performance of managerial functions. Further research will be focused on finding answers to questions:

1) What is the relationship between the work of the managers and the requirement of the ISO 9001: 2015 referred to in the chapter 7.1.6. Organizational knowledge?
2) What is the relationship between organizational innovation and the requirement of ISO 9001: 2015 in the chapter 6.3. Planning of changes?
3) What are the key indicators for assessing the effectiveness of organizational innovation?
4) What is the perception of organizational innovation of interested parties in line with the requirement 4.2. Understanding the Organization and its Context of the ISO 9001: 2015 standard?

The methods used will be observation and analysis of quality management systems in specific companies. The last area studied will be the identification of the critical impacts of organizational innovations on the work of managers. This will be done through direct observation in production medium and large companies and through personal interviews with managers at all levels of management. Through this focus, we want to reveal the challenges resulting from the implementation of organizational innovation. These will contribute to broadening the current knowledge of the negative impacts of introducing organizational innovation and

gaining a holistic view of the negative effects on the performance of managerial functions at all levels of management. Possible limitations in this case may be the time-consuming process of obtaining relevant data, which will also depend on companies´ managers´ willingness to cooperate.

5. Conclusion

Each company presents a living organism, having to face different challenges resulting from internal as well as external conditions. The success of each company depends on its ability to accept these challenges and to manage them well. With the right company attitude, these challenges can be used as leverage to encourage improvement and achieve better results. One option for achieving growth is the implementation of new, non-utilized means which will support improvements in many areas. These days, organizational changes become an inseparable part of most of the market subjects and strategy. Organizational innovation can take the form of various characteristics and influence company performance in different ways.

In this paper, we focused on determining the seven types of innovations which, in detail, were elaborated into 31 organizational innovations. Our next focus was to determine a set of managerial activities, the set of changes activated by the implementation of innovative solutions the influence it has on the work of managers as well as a set of hierarchical levels of management. The application of the sociological interrogation method helped us obtain relevant data that was processed, evaluated and based on the responses to the questions on how innovations activate the changes and the intensity of this influence in managerial work. The research results helped highlight these innovations based on the most frequently used in both larger and medium-sized Slovak industrial companies, their level of intensity, as well as identify the changes in managerial work that are activated by the implementation of individual organizational innovations. We were also able to identify managerial activities in which these changes are most frequently visible.

The results only prove that there is a substantial influence of organizational innovations on managerial work. Since the whole innovation process is difficult, especially from a management perspective and the utilization of all available resources, knowing these facts can provide companies a practical view on impacts resulting from implementation of different types of organizational innovations. This supports the concept of devising more effective management of these resources. At the same time, it enables the elimination of possible negative impacts in the case of management failure of the innovation process.

These results bring new light to existing findings that can help manage strategic decision-making in companies when implementing organizational innovation, and can also be an inspiration for new areas of research. Their deepening can be related to the study of the relationship between selected organizational, technological and marketing innovations, the negative impacts of organizational innovation, the status of organizational innovation in services, the identification of innovation prosperity, focusing on exploring what innovation requires and what it brings, examining their impact on teamwork in companies, how the quality of human resource management systems influences organizational innovation, the analysis of types of adaptive behavior in introducing organizational innovations, the comparison of the use of organizational innovations in Slovakia and other countries, the training of managers in the implementation of organizational innovations and others.

References:

Acharya, V., Gottschalg, O. F., Hahn, M., & Kehoe, C. (2013). Corporate Governance and Value Creation: Evidence from Private Equity. *The Review of Financial Studies*, *26*(2), 368-402. doi: https://doi.org/10.1093/rfs/hhs117

Armbruster, H., Bikfalvi, A., Kinkel, S., & Lay, G. (2008). Organizational innovation: The challenge of measuring non-techical innovation in large-scale surveys. *Technovation*, *2*(10), 644-657. doi: 10.1016/j.technovation.2008.03.003

Baker, H. K., Singleton, J. C., & Veit, E. T. (2011). *Survey Research in Corporate Finance.* Oxford: Oxford University Press.

Battisti, G., & Stoneman, P. (2010). How innovative are UK firms? Evidence from the fourth UK community innovation survey on synergies between technological and organizational innovations. *British Journal of Management*, *21*(1), 187-206. doi:10.1111/j.1467-8551.2009.00629.x

Bigliardi, B. (2013). The effect of innovation on financial performance: a research study involving SMEs. *Innovation: Management Policy & Practice*, *15*(2), 245-255. doi: http://dx.doi.org/10.5172/impp.2013.15.2.245

Bolívar-Ramos, M. T., García-Morales, V. J., & García-Sánchez, E. (2012). Technological distinctive competencies and organizational learning: Effects on organizational innovation to improve firm performance. *Journal of Engineering and Technology Management*, *29*(3), 331-357. doi: 10.1016/j.jengtecman.2012.03.006

Crowley, M. (2016). Neoliberalism, managerial citizenship behaviors, and firm fiscal performance. In Lisa A. Keister , Vincent J. Roscigno (ed.), *A Gedenkschrift to Randy Hodson: Working with Dignity* (pp. 213-232). Bingley: Emerald Group Publishing Limited

Desouza, K. C., Dombrowski, C., Awazu, Y., Baloh, P., Papagari, S., Jha, S., & Kim, J. Y. (2009). Crafting organizational innovation processes. *Innovation: Management, Policy and Practice*, *11*(1), 6-33. doi: 10.5172/impp.453.11.1.6

Do, B. R., Yeh, P. W., & Madsen, J. (2016). Exploring the relationship among human resource flexibility, organizational innovation and adaptability culture. *Chinese Management Studies*, *10*(4), 657-674. doi: 10.1108/CMS-01-2016-0022

Evangelista, R., & Vezzani, A. (2010). The economic impact of technological and organizational innovations. A firm-level analysis. *Research Policy*, *39*(10), 1253-1263. doi: 10.1016/j.respol.2010.08.004

Ferreira, D., Manso, G., & Silva, A.C. (2014). Incentives to Innovate and the Decision to Go Public or Private. *The Review of Financial Studies*, *27*(1), 256-300. doi: https://doi.org/10.1093/rfs/hhs070

Fey, D., Shipton, H., West, M. A., & Patterson, M. (2015). Teamwork and Organizational Innovation: The Moderating Role of the HRM Context. *Creativity and Innovation Management*, *24*(2), 261-277. doi: 10.1111/caim.12100

Ganter, A., & Hecker, A. (2014). Configurational paths to organizational innovation: qualitative comparative analyses of antecedents and contingencies. *Journal of Business Research*, *6*(6), 1285-1292. doi: 10.1016/j.jbusres.2013.03.004

Garud, R., & Turunen, M. (2017). The Banality of Organizational Innovations: Embracing the Substance–Process Duality. *Innovation: Management, Policy and Practice*, *19*(1), 31-38. doi: 10.1080/14479338.2016.1258996

Gu, S., & Lundvall, B. Å., (2016). China´s innovation system and the move towards harmonious growth and endogenous innovation. *Innovation: Management, Policy & Practice*, *18*(4), 416-440. doi: http://dx.doi.org/10.5172/impp.2006.8.1-2.1

Helfat, C. E., & Peteraf, M. A. (2015). Managerial cognitive capabilities and the micro foundations of dynamic capabilities. *Strategic Management Journal*, *36*(6), 831-850. doi: 10.1002/smj.2247

Kang, J. H., Solomon, G. T., & Choi, D. Y. (2015). CEOs´ leadership styles and managers´ innovative behavior: investigation of intervening effects in an entrepreneurial context. *Journal of Management Studies*, *52*(4), 531-554. doi: 10.1111/joms.12125

Kerr, W. R., & Nanda, R. (2015). Financing Innovation. *Annual Review of Financial Economics*, *7*(1), 445-462. doi: 10.1146/annurev-financial-111914-041825

Kossek, E. E., Ollier-Malaterre, A., Lee, M. D., Pichler, S., & Hall, D. T. (2016). Line managers´rationales for professionals´ reduced-load work in embracing and ambivalet organizations. *Human Resource Management*, *55*(1), 143-171. doi: 10.1002/hrm.21722

Laforet, S. (2011). A framework of organisational innovation and outcomes in SMEs. *International Journal of Entrepreneurial Behavior and Research*, *17*(4), 380-408. doi: 10.1108/13552551111139638

Laforet, S. (2013). Organizational innovation outcomes in SMEs: Effects of age, size, and sector. *Journal of World Business*, *48*(4), 490-502. doi: http://dx.doi.org//10.1016/j.jwb.2012.09.005

Lopez-Valeiras, E., Gonzalez-Sanchez, M. B., & Gomez-Conde, J. (2016). The effects of the interactive use of management control systems on process and organizational innovation. *Review of Managerial Science*, *10*(3), 487-510. doi: 10.1007/s11846-015-0165-9

Mazzanti, M., Pini, P., & Tortia, E. (2006). Organizational innovations, human resources and firm performance. The Emilia-Romagna food sector. *The Journal of Socio-Economics*, *35*(1), 123-141. doi: 10.1016/j.socec.2005.12.007

Meroño-Cerdán, A. L., & López-Nicolás, C. (2017). Innovation objectives as determinants of organizational innovations. *Innovation: Management, Policy and Practice*, *19*(2), 208-226. doi: 10.1080/14479338.2016.1276407

OECD (2005). *Oslo Manual - Guidelines for collecting and interpreting innovation data*. Paris: Organisation for Economic Cooperation and Development.

Pomffyová, M. (2008). Optimizing of Communication Processes Management. *E+M Ekonomie a management: vědecký ekonomický časopis*, *11*(4), 144-155. Retrieved from: http://www.ekonomie-management.cz/download/1331826697_bba1/14_pomffyova.pdf

Prasad, B., & Junni, P. (2016). CEO transformational and transactional leadership and organizational innovation: The moderating role of environmental dynamish. *Management Decision*, *54*(7), 1542-1568. doi: 10.1108/MD-11-2014-0651

Robertson, P. L., Casali, G. L., & Jacobson, D. (2012). Managing open incremental process innovation: Absorptive Capacity and distributed learning. *Research Policy*, *41*(5), 822-832. doi: http://doi.org/10.1016/j.respol.2012.02.008

Sirén, C., Patel P. C., & Wincent, J. (2016). How do harmonious passion and obsessive passion moderate the influence of a CEO´s change-oriented leadership on company performance? *Leadership Quarterly*, *27*(4), 653-670. doi: 10.1016/j.leaqua.2016.03.002

Slater, R. (1999). *31 tajemství úspěchu Jacka Welche*. Praha: Management Press.

Tang, J., Pee, L. G., & Iijama, J. (2013). Investigating the effects of business process orientation on organizational innovation performance. *Information and Management*, *50*(8), 650-660. doi: 10.1016/j.im.2013.07.002

Závadská, Z., & Závadský, J. (2018). Quality managers and their future technological expectations related to Industry 4.0. *Total Quality Management & Business Excellence*. Retrieved from https://doi.org/10.1080/14783363.2018.1444474

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