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Organizational Innovation Implications for Manufacturing SMEs: Findings from an Empirical Study

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Abstract

Building on the theories of organizational innovation and reconciling structural and procedural perspectives of organizational and managerial processes, this study assesses the impact of organizational innovation practices on organizational performance. An empirical study of more than 600 small and medium-sized enterprises (SMEs) from various industries was conducted to investigate the role of cross-functional teams, quality management systems, workplace organization and outsourcing, and external relationship management within sustainable innovation management strategies. Based on the empirical results, suggestions for further research and recommendations for SME leaders and practitioners are made. This study proposes insights that contribute to theoretical and practical discussions on promoting the systematic management of innovations in SMEs.

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1. Introduction

Small and medium-sized enterprises (SMEs) play an important role as drivers of social and economic well-being ensuring sustainable and ongoing growth [1]. Thus, their ability to create value and sustain a competitive advantage through innovation is essential for economic development. In this context, innovation is an important source of growth and a key factor for organizational performance and competitiveness [2,3,4,5,6,7,8].

However, the share of innovative SMEs in Europe remains low. In this context, Eurostat reported 46% of small and 63% of medium-sized enterprises compared to 77% of large enterprises as being innovative [9]. Additionally, several studies [10,11,12] conclude that the capacity to create knowledge and to innovate significantly differs amongst the EU countries, with Central and Eastern Europe continuously lagging Western Europe. Subsequently, according to Eurostat [9], the share of innovative enterprises in Latvia was just 25.5% of small, 45.1% of medium-sized, and 67.2% of large enterprises, significantly lower compared to the EU average. Moreover, innovation is a complex and uncertain process [13,14,15] that can involve significant risk and demand substantial resources. SMEs might not be able to allocate investments required for long-term, large-scale innovation projects [16,17,18] and lag in the adoption of digital technologies [1]. They may also lack qualified personnel to effectively implement and manage the change leading to great uncertainty within the implementation process of innovation [19,20].

The introduction of organizational innovation in Latvian SMEs is relatively low. According to the EC SBA Fact Sheet [21,22,23]. There are not many studies available depicting the institutional environment of SMEs concerning innovations in Latvia thus the current paper addresses this gap by providing an in-depth analysis of factors related to organizational innovation development in Latvian SMEs. The number of studies related to the aspects of organizational innovation practices (OIP) is steadily increasing. However, most of the recent studies are primarily focusing on technical respectively technological aspects [24,25,26] which simultaneously results in a missing socioeconomic perspective within the OIP. Moreover, studies assessing the importance of OIP in SMEs are still relatively scarce, particularly studies comparing SMEs between industries, studies including micro-enterprises, and studies looking at various behaviors and patterns based on the enhancement of organizational culture and knowledge management. This study aspires to fill this gap by identifying and assessing the impact of OIP on organizational performance in SMEs via a cross-sectional study of Latvian SMEs from various industries. The result of this paper can be used as a guideline for the systematic management of organizational innovation practices (in detail: 1) the usage of cross-functional teams, 2) quality management systems, 3) workplace organization and outsourcing, and 4) external relationship management) to increase the organizational innovativeness and the organizational competitiveness in manufacturing SMEs. Moreover, the further results serve as a starting point for in-depth analysis (e.g., structural equation modeling procedures) for scientists and research scholars in the area of innovation and production management.

2. Theoretical background

Organizational innovation practices can be assessed from a structural and procedural perspective. From a structural perspective, researchers like Boer [15] suggested a high centralization, high formalization, and low professionalism as organizational conditions favorable to organizational innovation (practices) in contrary to the conditions favorable for technical innovation. Decentralization, inclusive decision-making, and using knowledge from the entire organizational network is not per se always better. Yet, the fast change in most business environments nowadays requires more organic structures. Caroli and Van Reenen [27] proposed the decentralization of authority and delayering of managerial functions as important organizational changes needed for greater productivity. OECD and Eurostat [28] suggest three types of comprehensive business model innovations in existing organizations - 1) extending the business to new types of products or new markets, requiring new processes, 2) ceasing certain business activities and starting new activities instead and 3) changing business model for existing products through digitalization and other business processes, turning a tangible product into a knowledge-capturing service. OECD and Eurostat [28] and Walker et al. [29] considered such structural organizational innovations as the first use of a new system of employee responsibilities, teamwork, decentralization, integration, or de-integration of departments, and education and training systems. Merono-Cerdan and López-Nicolás [30] suggested that a workplace organization allows enterprises to directly improve their efficiency, while new business practices and external relations help to obtain other benefits, contributing to further innovation. Structural organizational innovations also include inter-organizational innovation relationships - new organizational methods in external relations, such as relations with business partners, customers, and suppliers, relations with public and research institutions, outsourcing or subcontracting and other activities [28,31].

From a procedural perspective, researchers such as Bortolotti et al. [32] considered lean management is a ‘managerial approach for improving processes based on a complex system of interrelated socio-technical practices’,

and suggested such hard lean management practices as setup time reduction, just-in-time delivery, equipment layout for continuous flow, Kanban, statistical process control and autonomous maintenance and such soft lean management practices as training employees, top management leadership for quality, supplier partnership, customer involvement, and continuous improvement. Concepts of leanness and agility initially came as best practices that organizations adopted with varying degrees of success. Yet, many businesses significantly improved their performance through these concepts [32]. Nowadays, lean principles are common in manufacturing and supply chain management, and they are rapidly expanding to organizations in other fields.

Various previous studies on innovation affecting factors for SMEs have shown the importance of innovation culture in different contexts and cultures. For example, a study on Croatian SMEs by Dabic et al. [33] revealed that higher business performance is positively related to higher levels of innovation culture. Moreover, larger companies were found to have better innovation culture and business performance, while the age and type of industry did not influence firm performance significantly. A study on Turkish SMEs investigated the relationships among innovation culture, product innovation, marketing innovation, and the market performance of SMEs. The findings showed that innovation culture is an effective source of both marketing innovation and product innovation as well as had a significant impact on market performance [34]. Innovation has been found to have a positive impact on SME performance in the Indonesian context [35] as well as on financial SME performance in Ghana [36]. Similar conclusions were drawn from the study on SMEs from the Pakistani textile industry - it showed that innovation capabilities had a significant influence on SME performance [37].

Organizational innovation includes changes in business practices, workplace organization, and external relations [28,29]. Enterprises introduce organizational innovation to improve operation efficiency, quality control, learning, foster other types of innovation or market development [38,39]. Even though Schumpeter proposed organizational innovation as one of the innovation forms already in 1934, the subsequent literature frequently associated innovation primarily with technological innovation, research and development, and the creation of new products [31,40].

At the same time, a growing number of more recent studies find organizational innovation beneficial for enterprise innovativeness and performance [5,12,31], as well as an important and sustainable source for competitive advantage [38,41].

There is a rich body of research showing the effect of organizational innovation on various forms of firm performance in the SME context. For instance, Albassami et al. [42] found that organizational innovations have a positive influence on the performance of the SMEs in the Pakistani sample. Another study has found that organizational innovations have a positive effect on SME international performance in Ghana [43]. Organizational innovation was found to have a mediating effect on the relationship between e-business and firm performance in the study of manufacturing SMEs in Spain [44]. Kim-Soon et al. [45] have made a profound study on SMEs in Malaysia and found that organizational innovation has a significant and positive relationship with financial performance.

A broad consensus finds innovation outcomes generally favorable to business performance [29], as they contribute to turnover, market share, productivity, and efficiency [28].

First, organizational innovation empowers organizational structures and processes to use new technologies [31], enhances coordination and cooperation [5], and improves learning, acquisition, and internalization of external knowledge [28,30], thus it can create a favorable environment and facilitate development or adoption of product, process or marketing innovation [12,45]. In this study, we consider this as organizational innovativeness (OI) - an enterprise's ability to implement various types of innovation.

Second, organizational innovation increases the enterprise's efficiency, productivity, quality, and flexibility [6,31], and responsiveness to environmental changes, leading to better business performance [38,39,41], thus fostering organizational competitiveness (OC) - enterprise's ability to compete in the marketplace. Considering the analysis of the impact of organizational innovation practices on organizational performance in SMEs, this study proposes the following conceptual model which is displayed in Figure 1.

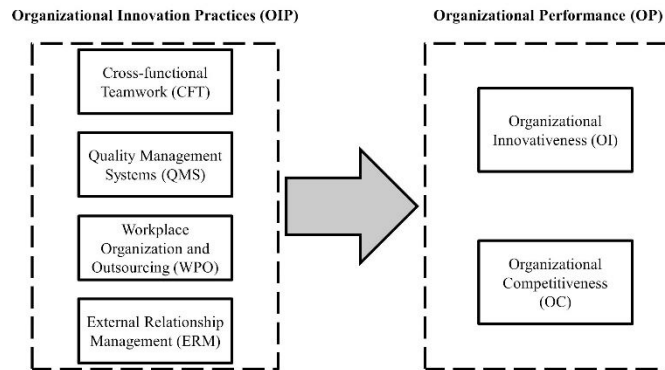


Fig. 1. Conceptual model.

Thereby, based on the theoretical foundation of this study, the model investigates the relationship between cross-functional-teamwork (CFT), quality management systems (QMS), workplace organization and outsourcing (WPO), and external relationship management (ERM) as elements of the variable organizational innovation practices (OIP) on the variable organizational performance (OP) by measuring organizational innovativeness (OI) and organizational competitiveness (OC). CFT, WPO, and ERM are structural innovations, while OIP are defined as procedural innovations.

3. Material and methods

This section introduces the research and methods and explains how the constructs are operationalized and explains the target groups and instruments of data collection.

3.1. Description of variables and questionnaire development

The independent variable organizational innovation practices (OIP) was operationalized by adapting two conceptual frameworks developed by OECD and Eurostat [28] and Armbruster et al. [31]. Additionally, an item measuring cross-functional teams was adopted from Zortea-Johnston et al. [46] leading to a set of indicators for 1) cross-functional-teamwork (CFT), 2) quality management systems (QMS), 3) workplace organization and outsourcing (WPO), and 4) external relationship management (ERM). Innovation can be measured as a process of change or a result of adoption (Armbruster et al., 2008). This study focuses on innovations as a result of the adoption, allowing to distinguish between companies that have introduced and that have not introduced certain innovations. The questionnaire also allows us to measure the extent to which innovation has been implemented (from not implemented at all to implemented in the whole organization). Additionally, the authors considered the different lifecycles of organizational innovations, and following a recommendation of Armbruster et al. [31] did not include any specific period during which innovation had to be implemented, thus avoiding incorrectly classifying early adaptors as non-innovative.

The dependent variable organizational performance (OP) was measured using two follow-up questions: 1) to what extent the implemented innovation helped to increase competitiveness (to measure organizational competitiveness, OC) and 2) whether it improved the enterprise's ability to implement other types of innovation (to measure organizational innovativeness, OI). These questions were created based on theoretical considerations and asked only in case there was any form of OIP already implemented.

The independent and dependent variables describing the introduction of organizational innovation were measured on a 10-point scale, ranging from 1 (not used) to 10 (fully implemented). The follow-up items measuring contribution to competitiveness and innovativeness were measured on a 10-point scale, ranging from 1 (strongly disagree) to 10 (strongly agree). In both cases, detailed explanations were provided just for the endpoints of the scale. Variables measuring follow-up factors were computed by using an interval scale and considered for further

quantitative statistical analysis. The proposed questionnaire items were reviewed by academics and managers familiar with the research subject, and some items were reformulated considering their feedback.

3.2. Sample and data collection

The questionnaire was disseminated amongst commercially active SMEs in Latvia. This paper follows the European Commission Recommendation of 6 May 2003 defining micro, small and medium-sized enterprises (SMEs) - 2003/361, using the staff headcount criteria categorizing as SMEs those enterprises, which employ fewer than 250 persons. The stratified random sample was selected to match the general population of Latvian SMEs in terms of the number of employees, industries, and geographical location. Enterprises had to be at least one year old to avoid respondents that were not fully established structurally and just starting their business, as well as to adequately report the innovation processes. The enterprises had to be represented by senior managers as key respondents to ensure that they had adequate knowledge and oversight of organizational and innovation processes. The field study was carried out by the research agency Kantar TNS using a computer-assisted telephone interviewing (CATI) method in cooperation with the University of Latvia and support from the patron Eigis Dāvis Timermanis. In sum, Kantar TNS contacted 2,802 enterprises, resulting in 636 completed interviews with senior managers, a response rate of 26.70%. Of those, 604 (21.56%) were suitable for further statistical analysis. Regarding the industry type, 28.87% of the responding enterprises can be assigned to manufacturing (e.g., mining, manufacturing, electricity supply, water supply, construction), 39.40% can be assigned to manufacturing-related (e.g., trade, transport and storage, information and communication technologies), and 31.73% can be assigned to other industries (e.g., professional, scientific and technical services). From a methodological point of view, the authors will use the one-way ANOVA to investigate significant differences in variables between different test groups) and the Pearson Correlation to investigate significant correlations between the independent and dependent variables of the proposed research model.

4. Results

Regarding the introduction of organizational innovation practices (OIP), senior managers reported that workplace organization and outsourcing is the most implemented form of OIP in Latvian SMEs (mean rating: 5.59), followed by quality management systems (mean rating: 5.15), external relationship management (mean rating: 4.05) and, finally, cross-functional teamwork (mean rating: 3.37). More than half (55.3%) of the surveyed enterprises had not introduced cross-functional teamwork, while just 7.5% had it implemented throughout the enterprise, 29.3% had not introduced quality management systems, while 10.6% had them fully implemented, 23.5% had not introduced workplace organization and outsourcing, while 14.9% had it fully implemented and 42.2% had not introduced external relationship management compared to 8.4% that had it fully implemented.

The introduction of organizational innovation practices (OIP) was related to several factors.

First, the number of employees - the more employees an enterprise had, the more likely it was to introduce OIP. For instance, 68.1% of micro-enterprises had not introduced cross-functional teamwork, compared to 45.1% of small and 34.7% of medium-sized enterprises, 36.8% had not implemented quality management systems, compared to 21.1% of small and 14.5% of medium-sized enterprises, and 54.9% of micro-enterprises had not implemented external relationship management compared to 30.8% of small and 25% of medium-sized enterprises. This difference was statistically significant for all types of organizational innovation except workplace organization and outsourcing as determined by one-way ANOVA for cross-functional teamwork ($F(2,593) = 22.753, p = .000$), quality management systems ($F(2,588) = 9.272, p = .000$) and external relationship management ($F(2,599) = 20.008, p = .000$).

Second, similarly to the number of employees, introduction of OIP was related to the annual turnover. This difference was statistically significant for all types of OIP as determined by one-way ANOVA for cross-functional teamwork ($F(7,588) = 10.858, p = .000$), quality management systems ($F(7,583) = 3.976, p = .000$), workplace organization and outsourcing ($F(7, 593) = 2.622, p = .011$) and external relationship management ($F(7, 594) = 8.021, p = .000$).

Third, younger enterprises were more likely to introduce workplace organization and outsourcing, while older enterprises focus on the implementation of external relationship management. The difference was statistically significant as determined by one-way ANOVA for outsourcing ($F(3,597) = 4.051, p = .007$) and external relations ($F(3,598) = 3.729, p = .011$).

Fourth, enterprises with more than 50% of foreign capital in their equity capital had a greater likelihood to introduce OIP compared to enterprises without foreign capital. The difference was statistically significant between groups as determined by one-way ANOVA for cross-functional teamwork ($F(3,592) = 4.907, p = .002$), quality management systems ($F(3,587) = 2.939, p = .033$) and external relationship management ($F(3,598) = 4.252, p = .006$), as well as with slightly lower significant for workplace organization and outsourcing ($F(3,597) = 2.570, p = .053$).

Fifth, the analysis revealed regional differences in the likelihood to introduce OIP. Considering the type of region within larger cities, the difference was statistically significant between groups as determined by one-way ANOVA for cross-functional teamwork ($F(3,592) = 3.543, p = .014$) and quality management systems ($F(3,587) = 3.517, p = .015$), while considering the region with smaller cities, the difference was statistically significant between groups as determined by one-way ANOVA for cross-functional teamwork ($F(5,590) = 3.470, p = .004$) and quality management systems ($F(5,585) = 2.511, p = .029$).

Impact on Organizational Innovativeness (OI) and Organizational Competitiveness (OC)

The senior managers of the surveyed enterprises that had implemented OIP generally agreed that it helped them to become more innovative and more competitive. More than half (56.7%) of the senior managers confirmed that the introduction of OIP helped them to increase OC, 16.2% rated this statement above 8, while 11.77% rated it below 3. Similarly, 55.5% of senior managers agreed that the enterprise improved its ability to introduce OI and further innovations, such as new products, services, or marketing methods, of them, 14.1% rated it above 8 and 14.3% rated it below 3.

The impact of OIP on organization competitiveness (OC) and organizational innovativeness (OI) depended on the level and the number of OIP the enterprises had already implemented. Senior managers from enterprises that had implemented at least one form of OIP to an average level (above 5), rated the impact to OC on average at 5.10, those that had implemented two forms of OIP found a greater impact on OC and rated it on average at 6.71, and enterprises that had implemented three or four types of OIP rated the impact on OC on average at 7.22.

Similarly, enterprises that had not implemented any OIP at least at an average level, rated the impact on OI on average at 4.43, those that had implemented one form of OIP on average at 4.83, those that had implemented two forms of OIP on average at 6.60 and those that had implemented three or four forms of OIP on average at 6.96 and 7.60. Regarding the relationship between the introduction of OIP and OI, respectively, the introduction of OIP and OC, the Pearson correlation between the overall OIP index, computed as an average from CFT, QMS, WPO, and ERM, and OC was 0.464 and between an overall OIP index and OI was 0.452. When assessing various types of OIP, all statistically significantly correlated with OC and OI. Moreover, Tab. 1 shows the Pearson correlation coefficients for each type considering only enterprises that had implemented a particular type of OIP. Quality management systems were the most influential type of OIP in terms of OC (Pearson correlation 0.438) and OI (Pearson correlation 0.420), followed by external relationship management (Pearson correlation 0.377 for OC and 0.291 for OI). Enterprises that found OIP beneficial for OC commonly found them beneficial also for OI (Pearson correlation 0.669, for medium-sized enterprises 0.709). The correlations are summarized in Tab. 1.

Table 1. Correlation matrix for OI competitiveness and innovativeness.

	Organizational Innovativeness (OI)	Organizational Competitiveness (OC)
Overall OIP Index	.452**	.464**
CFT	.283**	.306**
QMS	.420**	.438**
WPO	.253**	.297**
ERM	.291**	.377**

This confirms that the introduction of OPI is generally beneficial for SMEs, as OI enhances their organizational competitiveness (OC) and serves as an enabler for organizational innovativeness (OI).

5. Discussion

Assessing the implementation of OIP, senior managers reported that workplace organization and outsourcing is the most implemented form of OIP in Latvian SMEs, followed by quality management systems and external relationship management, while cross-functional teamwork was, on average, less implemented. Of the surveyed enterprises, 8.11% had not implemented any form of OIP to any level, while 24.8% had implemented all assessed forms of OIP at least partially. At the same time, 40.4% of enterprises had not implemented any of the OIP in the organization, 29.5% had implemented one form of OIP, 18.1% two forms of OIP, and 12.09% more than two forms of OIP in the organization. Thereby, the introduction of OIP organizational innovation was related to several factors. Firstly, this study confirms the relationship between the number of employees and OIP - the more employees an enterprise had, the more likely it was to introduce OIP (as suggested by Schmidt and Rammer [47], Laforet [48], and others). Secondly, the annual turnover - the bigger the annual turnover, the higher the likelihood of introducing OIP, likely due to available resources for innovative activities (as also discussed by Nohria and Gulati [49] and Damanpour et al. [26]). Thirdly, regarding foreign ownership, enterprises with more than 50% of foreign capital in their equity capital had a greater likelihood to introduce any form of OIP compared to enterprises without foreign ownership. Foreign ownership could imply that the enterprise is part of an international enterprise group or network.

Fifth, enterprises from larger cities were more likely to innovate, particularly by introducing cross-functional teamwork and quality management systems, compared to enterprises from smaller cities. This could be explained by the different external environment and more intense competition in larger cities, and thus an increasing need for companies to differentiate. Our findings that the larger size of the company is related to more innovations are consistent with a meta-analysis conducted by Camison-Zornoza et al. [50] that confirmed the existence of a significant and positive correlation between firm size and innovation. Geographical location favoring innovative activities in the larger cities as firms tend to cluster in metropolises was also confirmed in various previous studies on innovation and entrepreneurial ecosystems [51,52,53,54].

6. Conclusions and suggestions for further research

The empirical results tendentially substantiate that organizational innovation practices (OIP) can influence organizational innovativeness (OI) and organizational competitiveness (OC). Moreover, the results indicate, that the introduction of organizational innovation relates to several enterprise factors. Medium-sized enterprises are more innovative than small enterprises, which are more innovative than micro-enterprises. Additionally, enterprises with higher turnover, those located in Riga, and those with foreign ownership are more innovative. Manufacturing enterprises are more likely to introduce quality management systems, construction enterprises - teamwork and outsourcing, while trade enterprises are generally less likely to innovate. Moreover, this study finds organizational innovation beneficial for enterprise innovativeness and competitiveness; the more an enterprise had implemented organizational innovation, the more beneficial this enterprise found it.

To evaluate the usefulness of organizational innovation practices (OIP), this study assessed, whether the implementation of OIP helped enterprises to increase their organizational competitiveness (OC) and their organizational innovativeness (OI) by introducing other innovations, such as new products, services, or marketing methods. Senior managers of the surveyed enterprises that had implemented OIP generally agreed that it helped them to become more innovative and more competitive.

The research findings recommend that SME managers shape and promote an organizational culture that encourages various OIP, thus ensuring more commitment to the organization and capturing more innovative opportunities. The findings of this study also highlight the importance of SME managers to focus on organizational results and performance and recognize and reward employee contributions towards innovation. Thirdly, the research findings concluded in this study imply that SME managers must engage all members of the organization in long-

term strategic planning, thus creating a shared understanding of organizational vision and goals and capture long-term innovative opportunities.

This study found employee initiative, inclusion in decision-making, and professional development amongst the key aspects supporting organizational innovation. Participation in professional development was directly linked with the number of employees, with larger organizations providing more professional development opportunities, while, at the same time, employee initiative and inclusion in decision-making were higher for micro-enterprises and medium-sized enterprises compared to small enterprises. This dynamic could be explored further - whether small enterprises are already too big to keep the same level of employee engagement as micro-enterprises yet lack adequate involvement structures and processes that medium-enterprises may have and to what extent senior managers of SMEs find employee commitment an essential aspect to support innovation.

Based on these research findings, chief executives are highly recommended to provide employees opportunities allowing them to take part in professional development training and including them in decision-making processes, which would lead to more knowledge and greater commitment, thus benefiting the whole organization.

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