

Analysis of Organizational Management Factors Affecting the Innovation Capability of Small and Medium-Sized Enterprises

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Abstract

The purpose of this article is to evaluate how management characteristics affect small and medium-sized enterprises' (SMEs) capacity for innovation. A total of 315 SMEs in Uzbekistan were analyzed between 2022 and 2023. Leadership, information and knowledge management, customer relationship management, business-society relationship management, results, age, and size were among the internal aspects taken into account. Innovation capability was evaluated using sectoral innovation level. The correlations were analyzed using data envelopment analysis and multiple linear regression. The results showed that an organization's efficiency and capacity for innovations are positively impacted by information and knowledge, customer interactions, leadership, and society.

Keywords

Innovation capability, determinants of innovation, small and medium-sized enterprises, data envelopment analysis, multiple linear regression

Introduction

The main direction of successful economic development of the country and raising the standard of living of the population is the development of innovative activities. At the heart of every phenomenon required for the development and application of innovative technologies and processes in the manufacturing of competitive goods are innovative firms. Under these

circumstances, innovation policy plays a crucial role in the advancement of both society and the nation's economy. It goes without saying that the only way it can be successfully implemented is in a methodical manner by introducing innovations in all spheres of society, but especially in the industrial sector. At the same time, innovative changes are required not only directly in the production process of enterprises, but also in the field of management, product quality, planning methods, and other elements of production.

Innovative changes should also cover all stages of the enterprise's activities, including the implementation of the results of activities (products, services) on the market. Criteria and indicators of the economic efficiency of products or processes are not used to assess the economic efficiency of the functioning of an innovative enterprise in market conditions. The efficiency of the enterprise as a whole is expressed by a number of performance indicators and a corresponding series of criteria for their assessment, i.e. there is a "vector" approach to assessing the effectiveness, but the methods of its application have not been brought to practical use. In foreign economic science, the so-called "value approach" is widely used, in which the indicator of the market value or "capitalization" of the enterprise is used to assess the effectiveness. In our conditions, the application of the cost approach to assessing efficiency is difficult due to the underdevelopment of the financial market. Despite the solid scientific groundwork, it can be stated that the problem of increasing the efficiency of the functioning of an innovative enterprise, taking into account the national specifics, is insufficiently developed. The innovation vector today is a prerequisite for the development of high-tech and high-performance areas of industry, a factor in the competitiveness of enterprises' products in market conditions in any form of organization of economic activity.

The transition to the digital economy stimulates the innovation process towards technological modernization of production, increasing its efficiency and mastering new competitive types of products, allows generating relatively high added value and at the same time saving all factors of production, including capital costs, which is important to reduce the costly nature of production processes in conditions limited resources available for development. At the same time, the resulting savings are a key factor in increasing the market value of the enterprise, which, in turn, characterizes the economic efficiency of the enterprise as a whole.

The efficient operation of the enterprise is also an integral part of the economic model of industrial policy aimed at protecting the domestic producer - that is, the policy of import substitution. At the same time, the replacement of imports of industrial products with their own production is an innovative development program for domestic enterprises, since replacement products for manufacturing enterprises are new. The criterion of economic efficiency the innovation

process at an enterprise is considered to be the elasticity of production costs of products relative to the savings of capital investments - the coefficient of elasticity of production costs relative to capital investments is less than one.

Pursuing novelty to enhance competitiveness and enhance competitiveness is what is meant by innovation for organizations (Schumpeter, 1982). The ability to innovate is viewed as critical to an organization's and economic sector's performance, as it enables the market to depart from its steady state. Large organizations benefit from a broader range of business opportunities and find innovation easier due to their superior management structure.

Small and medium-sized enterprises (SMEs) face barriers to accessing technological resources due to their limited resources and capabilities (Laforet & Tann, 2006), which limit their ability to innovate. This capability is the result of the firm developing a variety of capabilities, including technological, operational, managerial, and commercial capabilities (Zawislak et al., 2012). Technology-driven capabilities are a limitation for SMEs, but business-driven capabilities, like management and commercial skills, are essential for fostering innovation and creating a competitive advantage. Therefore, it is advantageous for these firms to learn more about the innovation stage in SMEs and the ways in which management and business talents can stimulate innovation. Studying this subject is critical for comprehending how various factors interact and affect organizational performance (Ganau & Maria, 2014).

Despite their emphasis on managerial issues, the authors take a narrow view of organizational management and fail to grasp how multiple managerial factors and their interactions affect innovation. Additionally, established relationships can be impacted by cultural and sectoral factors (Genis-Gruber & Ögüt, 2014). Management aspects of innovation continue to be underutilized, and the dearth of studies examining these relationships in SMEs in developing countries contributes to this gap (Elj & Abassi, 2014).

In this context, the purpose of this work is to address the following research question: What organizational management factors affect the innovation capability of SMEs?

Through the course of the research, we hope to learn about the managerial factors that foster innovation, enabling organizations to identify and develop the capabilities required for the activity. Additionally, analyzing the stage of innovation of SMEs enables understanding of the differences between them and large organizations, stimulating the development of needs-based public policies.

Materials and Methods

This study took into account SMEs in Uzbekistan in the period from 2022 to 2023. SMEs were defined as organizations registered in Uzbekistan. The 315 companies were randomly selected from the 2,838 participating in the program in 2022, resulting in an error rate of 5.21 percent and a confidence level of 95 percent. Priority was given to the most representative segments of the program: food, furniture, clothing, gastronomy and tourism. The data is taken from an initial diagnosis conducted by the program prior to the company's actual involvement.

Although the sample was not stratified by segment, there is no discrepancy in the frequencies of the groups, indicating that the sample is representative of the population (Chi-square test: $\chi^2 = 3.714$, with a significance level of 0.466 and $p = 0.05$).

The purpose of this paper is to identify and quantify the effect of managerial factors on SMEs' ability to innovate. Thus, multiple regression is a statistical technique that enables the determination of the effect (quantity and direction) of independent variables on the dependent variable (Galende & de la Fuente, 2003).

Econometric model is as follows:

$$C_{i,t} = \alpha + \beta_1 X_{n,i,t} + \beta_2 Age_{i,t} + \beta_3 Size_{i,t} + \beta_4 sector_i + \varepsilon_{i,t}$$

$C_{i,t}$ -innovation capability of the firm i at time t ; α is the constant; $X_{n,i,t}$ -managerial factors n of firm i at time t ;

The managerial factors, which were treated as independent variables in the model, were constructed using the literary review's constructs. Additionally, the regression included a dummy variable referring to the economic sector.

Results

Table 1: Descriptive statistics

		Number of companies	Frequency
Sector	Cafeteria	71	22.5%
	Furniture	53	16.8%
	Clothes	68	21.6%
	Gastronomy	66	21.0%
	Hotel	57	18.1%
Age	1-5	127	40.3%
	6-15	111	35.2%
	16-25	56	17.8%
	25	21	6.7%
Size	1-10	182	58.0%
	11-20	71	22.6%

	21-40	44	14.1%
	40	17	5.5%
Region	Capital city	270	86.1%
	Other regions of Uzbekistan	45	13.9%

Around 40% of SMEs analyzed have existed for between one and five years; the lower the frequency, the wider the age range, indicating a long-term mortality trend. It was discovered that 58% of businesses have between one and ten employees, and that the lower the frequency, the larger the size. The capital had a higher concentration of businesses (86.1%), while the other regions accounted for 13.9% of the sample.

Table 2: Regression results

Variable	Coefficient	<i>p-value</i>	Collinearity	
			Tolerance	FIV
Constant	0.700	0.000 *		
Leadership	0.084	0.009 *	0.398	2.514
Customers	0.051	0.098 **	0.468	2.136
Society	0.071	0.006 *	0.658	1.519
Information and knowledge	0.146	0.000 *	0.459	2.177
People	-0.024	0.467	0.480	2.083
Results	-0.017	0.196	0.580	1.723
LnAge	0.015	0.251	0.744	1.344
LnSize	0.015	0.133	0.797	1.254
Sector	-0.013	0.539	0.702	1.424
R²	0.336			

The results of the multiple linear regression analysis and the underlying assumptions for the 315 companies are shown in Table 2. The proposed model had a high predictive power, with an R² of 33.6 percent, outperforming models from Alves et al. (2017), Farace and Mazzotta (2015), Ganau and Maria (2014), and Galende and Fuente (2003). Although this study focuses exclusively on managerial and commercial resources, the variables considered had a high degree of explanatory power for the firm's ability to innovate.

The regression result indicated that "leadership," "customers," "society," and "information and knowledge" all had a positive and significant effect on innovation generation, highlighting the critical role of these resources in developing dynamic capability. The variables "people," "results," "age," and "size," on the other hand, were irrelevant.

The importance of the variable "leadership" is consistent with Teece's assessment of the entrepreneur as a critical component of dynamic capability. His prior experiences, knowledge, and abilities all contribute significantly to the development of innovation.

Discussion

However, the acquired knowledge and experience of the employees did not have a noticeable effect on their innovative spirit. Reluctance in defining and implementing performance improvement tasks and capabilities can hinder the development of innovation. The results show that employees participate little in innovation processes, because their activities are limited to routine tasks.

The results obtained by the firms do not appear to have an effect on their ability to innovate. Additionally, it was noted that many of the SMEs analyzed lack financial control, indicating that this is unrelated to innovation. The Schumpeterian hypothesis that size has a positive effect on a firm's innovation capability was also rejected by the regression, disassociating this capability from the possession of these resources. Contrary to what the literature suggests, the "age" variable had no effect on the innovation of SMEs.

These findings emphasize the critical nature of acquiring these resources and capabilities for the competitiveness of SMEs. However, as expected, they account for only a portion of the innovation capability, highlighting the critical role of factors external to the organization in driving innovation. After all, innovation capability is largely determined by strategic decisions, rather than accumulated experiences and resources.

Conclusion

The purpose of this study was to examine and quantify the influence of management factors on the innovation capability of SMEs. To this end, the current study combined perspectives on innovation capability from the RBV perspectives. Although the development of excessive strategies can lead to underinvestment in dynamic capabilities, this paper shows that the development of effective innovation strategies can occur through investing in dynamic capabilities and middle management resources.

Although the study limited the model by focusing exclusively on management and business operations activities. The results show its important role in achieving competitive advantage for SMEs. This perspective is critical because many studies focus on large organizations where technological resources are critical. As SMEs struggle to acquire and use technology, the paper shows how managerial and business skills become critical for innovation. Thus, research shows that

innovative skills arising from dynamic capabilities are not only related to entrepreneurial and strategic management, but also with knowledge and information obtained through information networks, as well as relationships between customer relations and business life.

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