Evaluating the Factors Affecting the Innovativeness of Small Businesses: the Case of Uzbekistan

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Abstract

Small businesses are considered the backbone of economic growth in all countries. They are not only a source of economic growth but also innovation in all industries. The article examines the factors influencing the innovativeness of small businesses using Uzbekistan as a case study. The experience of small business owners, as well as the knowledge and skills of employees, are important factors influencing innovative activity. Based on the results, recommendations for enhancing innovative activity in small businesses are proposed.

Keywords: Small business; Innovative activity; Human Development Index; Economic Freedom Index

1 Introduction

In an era characterized by rapid technological advancements, small businesses are considered one of the key drivers of every economy to achieve sustainable economic growth and shape an innovative economy. In particular, one of the main directions of the Strategy of Innovative Development of the Republic of Uzbekistan [1] is to ensure accelerated socio-economic growth in regions by enhancing the innovative activity of small businesses.

According to statistical data for 2024, 84,3 % of all active entrepreneurial entities are small business structures [2], which account for 54.3 % of the gross domestic product, 74.5 % of employment [3], 22.5 % of the volume of innovative costs, and 69,2 % of implemented innovations.

The high flexibility of small enterprises, which enables them to quickly adapt to market changes, the opportunity for employees to express their ideas freely, minimal bureaucratic obstacles in management, and close relationships with customers and partner organizations contribute to enhancing their innovative activities. However, several factors hinder the innovation potential of small entities, including a lack of internal financial resources, insufficient knowledge and experience among employees and managers in implementing innovations, limited access to infrastructure and other constraints.

This study aims to analyze the factors affecting the innovative activities of small businesses, using the Republic of Uzbekistan as a case study, and develop proposals and recommendations for enhancing their innovation capacity.

2 Literature Review

It is known that entrepreneurial activity (entrepreneurship) is an initiative activity carried out by business entities in accordance with the law, aimed at generating income (profit) based on risk and under their property liability [4]. To carry out entrepreneurial activity, it is necessary to combine production factors, like natural resources, labor, capital, and entrepreneurial skills. Additionally, many scientific studies [5],[6] consider innovations as a modern factor of production and an essential condition for business activity.

Innovations bring positive results for companies. Adopting innovation can be a way for SMEs to gain a competitive advantage, reduce costs, increase profitability, and improve product quality or working conditions

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[7]. As SMEs become more innovative, their productivity increases, which in turn helps reduce economic inequality by providing employees with higher wages and better working conditions [8].

The factors influencing enterprise innovation activity are the subject of numerous scientific studies. The range of the factors considered in these studies is sufficiently broad and includes not only the characteristics of small businesses (such as firm age, form of ownership, type of activity, geographical location, financial indicators and personnel structure) but also the socio-economic indicators of a country or region (such as rate of economic growth, standard of living, level of scientific and technological development and level of education). To gain insights into the performance factors influencing the innovativeness of SMEs in emerging countries, a sample of six scientific papers has been compiled for this research. The selection criteria for the papers are as follows: a) focus on small and medium sized enterprises, b) use of the econometric tools for analysis, and c) the countries studied are classified as emerging economies.

Table 1 presents the empirical investigations on the factors influencing SME's innovativeness in different countries and their main findings.

Table 1: An empirical investigation of the factors influencing the innovativeness of SMEs.

Researcher	Regions and sample size	Key findings
Agwu (2014), [9]	Nigeria, 120 small businesses	The main problems faced by small businesses are insufficient social infrastructure, poor financial support, shortage of managerial competencies, and multiple taxation.
Farsi and Toghraee (2015), [10]	Iran, 245 small businesses	The most important challenges have been identified: inadequate education and skills, lack of managerial training and experience, lack of credit, high cost of credit, national policy and regulatory environment, technological changes, lack of market information.
Claudino, Santos, Cabral, Pessoa (2016), [11]	Brazilia, 20 small businesses and a local innovation agent	Fostering factors of innovation: management support and planning of actions required for implementation; Limiting factors of innovation: absence of qualified personnel, fear of innovation consequences, entrepreneurs and employees' conformism.
Uvarova &Vitola (2019), [12]	European rural regions, In 6 regions, meetings were organized among participants of the innovation ecosystem, with an average of 31 people	The main challenges in adopting innovation are shortcomings in the environment for innovation, inappropriate innovation policies and support measures, lack of knowledge and skills within companies, difficulties to hire a new skilled workforce and low competitiveness compared to urban counterparts.
GregoPlaner & Kus (2020), [13]	Poland, 202 small businesses	The populational level of education, the pace of technology and technological development, management attitude towards innovation (owner), corporate image and reputation positively impact innovation. Workforce mobility, work ethic, employee technical culture negatively impact innovation.
Karolina Beyer (2022), [14]	Poland, 12 small businesses engaged in innovative activities	Internal barriers: lack of skilled workers, lack of willingness to improve employees' competencies, barriers resulting from employees' fear and reluctance to implement changes; External barriers: high cost of innovation, ecology policy and too strong competition in the market.

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One can conclude from this that the main factors influencing SMEs' innovation performance are insufficient skills and knowledge in innovation (Farsi & Toghraee, 2015; Claudino et al., 2016; Uvarova & Vitola, 2019; Beyer, 2022), employees' fear of change (Claudino et al., 2016; Beyer, 2022), a shortage of managerial competencies and experience (Agwu, 2014; Farsi & Toghraee, 2015), management support and attitude towards change (Claudino et al., 2016; Grego-Planer & Kus, 2020), limited credit resources and high interest rates (Farsi & Toghraee, 2015; Agwu, 2014), lack of infrastructure (Farsi & Toghraee, 2015), and inappropriate innovation policies (Farsi& Toghraee, 2015; Uvarova & Vitola, 2019; Beyer, 2022).

3 Materials and Methods

The data for this research are collected from several sources, including the annual Index of Economic Freedom report from Heritage Foundation, the annual Human Development Index report from UNDP, and publications titled Small Entrepreneurship in Uzbekistan from the Statistics Agency. The analysis covers the years 2010 to 2022. The dependent variable is the innovativeness of small entities, and the volume of innovation output is chosen as a proxy for it.

We investigate the influence of independent variables, such as employee knowledge and skills, managers' experience and competencies, infrastructure, government support, and financing opportunities on innovativeness. Proxies for independent variables are given below:

Table 2: Innovativeness of small businesses, factors influencing it, and their proxies.

<table>
<tr><th>Variables</th><th>Proxy</th><th>Definition of indicators</th><th>Source</th></tr>
<tr><td>Innovativeness of small businesses</td><td>The volume of innovative outputs</td><td>The volume of innovative goods, works and services produced by small businesses during the financial year, measured in million soms;</td><td>Publication of the Statistics</td></tr>
<tr><td>Employees' knowledge and skills; Managers' experience and competencies</td><td>Human Development Index</td><td>It is an aggregate measure of average achievement in three important areas of human development: health, education and standard of living. The overall score ranges from 0 to 1. Where higher performance indicates better a region's human development;</td><td>Human Development Reports, [16]</td></tr>
<tr><td colspan="4">These three sub-indices of the Index of Economic Freedom are measured on a scale from 0 to 100, where a score of 100 corresponds to the maximum level and 0 to the minimum.</td></tr>
<tr><td>Government support</td><td>Property rights sub-Index</td><td>It offers a measurable indicator of how well a nation's laws safeguard private, including intellectual property rights, and how well those laws are respected;</td><td rowspan="3">The Index of Economic Freedom: An annual report published by the Heritage Foundation, [17]</td></tr>
<tr><td>Infrastructure</td><td>Business freedom sub-Index</td><td>This component assesses the extent to which a region's regulatory and infrastructural framework hinders the effective functioning of businesses;</td></tr>
<tr><td>Financing opportunities</td><td>Financial freedom sub-Index</td><td>This indicator evaluates the degree of easy and efficient access to credit resources of commercial banks for businesses in a country's economy.</td></tr>
</table>

The descriptive statistics are presented in Table 3. The correlation matrix is presented in Table 4. As it can be seen, these explanatory variables are positively correlated with the innovativeness of small businesses (Figure 1).

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Table 3: Summary statistics

Variable	Mean	Std. Dev.
Innovativeness of small businesses, logged	14.36	1.74
Employees' knowledge and skills; Managers' experience and competencies	0.71	0.02
Government support	31.5	18.53
Infrastructure	69.13	4.51
Financial opportunities	13.85	8.70

Table 4: Correlation between innovativeness of small businesses and explanatory variables

Variables	Corr. (r)
Innovativeness of small businesses, logged	1.000
Employees' knowledge and skills; Managers' experience and competencies	0.966
Government support	0.781
Infrastructure	0.46
Financial opportunities	0.530

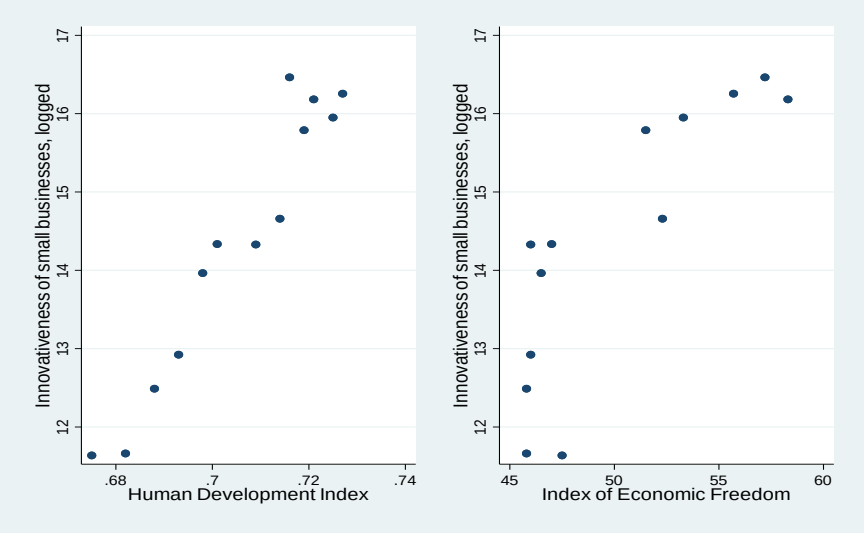

Figure 1. Scatter plot of Innovativeness of small businesses and explanatory variables

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We evaluate the following regression model to determine the relationship between small business innovativeness and its explanatory variables:

$$logInnovative\_activity = \propto \mathbf{0} + \propto \mathbf{1} * \boldsymbol{X} + \boldsymbol{\varepsilon} \quad (1)$$

Where:
logInnovative _activity – the log value of the volume of innovative goods, works and services produced by small business units;X- the explanatory variables mentioned above; ε – error term.

In Stata 15, we use ordinary least squares technique to evaluate equation 1.

4 Results and Discussions

Table 5 presents the main results of the regression analysis. Our results show a positive relationship between small businesses' innovative activity and all the variables included in the model.

Human capital emerges as one of the most important factors in the formation of the innovative economy of the Republic of Uzbekistan. The knowledge and skills of employees, as well as the competencies of managers, have a positive impact on the innovativeness of small businesses. For instance, 1 standard deviation increase in the human development index is associated with 1.4 percentage (82*0.017) increase in the innovative output of small businesses.

Infrastructure also has a statistically significant impact at the 5 % level, as its proxy, is the business freedom sub-index. An increase of 10 points in financial freedom led, on average, to an increase of about 0.77 percentage points in the volume of innovative output.

In addition, financial freedom has a positive effect on innovativeness, and 10 point increase in the financial freedom sub-index is associated with 0.34 percentage point increase in the volume of innovative output of small entities.

Table 5: Results of regression analysis

Variables	Coefficient	Significance level (p-value)	Standard error
Employees' knowledge and skills; Managers' experience and competencies	82.679	0.000***	9.641
Financial opportunities	0.0342	0.054*	0.015
Infrastructure	0.0765	0.016**	0.025
Government support	0.0114	0.193	0.008
Constant	-50.066	0.000***	6.729
Number of observations	13		
Adjusted R-squared	0.96		

Note: Significance of coefficients: ***-1 %, **-5 %, *-10% (the lower the percentage, the more significant is the influence of the variable)

Finally, our research also finds that government support has no statistically significant impact on the volume of innovative output of small firms. Additionally, this study tests for potential multicollinearity by evaluating the variance inflation factor (VIF). The mean VIF for the model equals 2.09, and all individual VIF values are significantly below the common threshold of 10, indicating that multicollinearity is not a serious concern.

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5 Conclusion

The factors influencing the increase of innovative activity of small business entities in the above-mentioned developing countries are also important for the Republic of Uzbekistan. Human capital, improvement of infrastructure and expansion of financing opportunities have been identified as key factors stimulating innovative activity.

Based on the analysis, we present the following recommendations for increasing the innovativeness of small business entities in Uzbekistan:

- Organize online courses, seminars and workshops for managers and employees of small business entities focused on managing innovative activities, and developing knowledge and skills in the field of technology;
- Establish "business clubs" to facilitate efficient communication among company groups;
- Simplify the process of financing innovative activities, diversify funding sources, and provide incentives, such as lower interest rates, grace periods, etc.;
- Broaden access for small business units to innovative infrastructure facilities, such as techno parks, special economic zones, and business incubators.

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