ORIGINAL SCIENTIFIC PAPER

THE DRIVERS OF BUSINESS PROCESS INNOVATION IN SERBIAN ENTREPRENEURIAL FIRMS

PAUNOVIĆ Mihailo[1], LAZAREVIĆ-MORAVČEVIĆ Marija[2], MOSUROVIĆ RUŽIČIĆ Marija[3], MINOVIĆ Jelena[4]

[1] *Institute of Economic Sciences, Belgrade (SERBIA) ORCID 0000-0002-3183-9971*
[2] *Institute of Economic Sciences, Belgrade (SERBIA) ORCID 0000-0002-6923-0483*
[3] *I nstitute of Economic Sciences, Belgrade (SERBIA) ORCID 0000-0002-7471-4933*
[4] *Institute of Economic Sciences, Belgrade (SERBIA) ORCID 0000-0001-6254-4888*

E-mails: mihailo.paunovic@ien.bg.ac.rs, marija.lazarevic@ien.bg.ac.rs, marija.mosurovic@ien.bg.ac.rs, jelena.minovic@ien.bg.ac.rs

ABSTRACT

This study aims to investigate the types of business process innovations promoted by Serbian entrepreneurial enterprises and to identify the factors that drive such innovations. The final sample includes 172 active entrepreneurial enterprises established in 2015. Statistical analysis included descriptive statistics, principal component analysis, correlation and multiple regression analysis. From two different perspectives, Serbian entrepreneurial businesses introduced a variety of business process innovations: those related to product or service development and those related to the production of goods or services. The quality of interaction within the entrepreneurial team and the organizational culture are the most important factors driving business process innovations in the production of products and services. In the area of business process innovation in product or service development, the primary triggers are owner persistence and organizational culture. To date, there are no studies addressing the drivers of business process innovation in Serbia. Understanding the specific factors that foster diverse forms of innovation can improve the effectiveness of innovation management in entrepreneurial firms, facilitate future innovation, and improve firm performance.

Keywords: *entrepreneurship, business process innovation, human capital, organizational culture, Serbia*

JEL: L26
DOI: 10.5937/intrev2501031P
UDC: 005.591.6:334.722(497.11)
005.332.3(082)
005.73
COBISS.SR-ID 172842761

INTRODUCTION

There is a relationship of interdependence and complementarity when it comes to innovation and entrepreneurship, where innovation is perceived as a source of entrepreneurship, and entrepreneurship is what enables innovation to develop and realize its economic and social value [1]. According to [2], entrepreneurship showcases innovation through the transformation of an idea or concept into tangible reality, facilitated by the injection of resources, whether in the form of capital or the backing of institutional leadership. In other words, innovation combines an inventive process with an entrepreneurial process, aiming to generate new economic worth for those involved. [3]. Especially within the framework of business research, the authors in [4] highlight the crucial interconnections and synergies between knowledge, entrepreneurship, and innovation.

Innovation has been defined in numerous ways among scholars, but the common element for all of them is "novelty" or "newness" [5]. There is a clear distinction and understanding of how innovation can occur in different dimensions: developing new or improved products, enhancing or transforming production processes, and introducing novel or enhanced services. The classification of innovation into products, processes, and services is the most commonly used in the literature [5]. In line with the Oslo Manual [6], innovation is "a new or improved product or process (or a combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)" [6]. The Oslo Manual [6] categorizes innovation as product innovation and business process innovation. A product refers to goods or/and services, while business processes encompass all the essential activities conducted by a firm to produce its products or deliver its services. More precisely, business process innovation covers the production of goods or services, distribution and logistics, marketing, information and communication systems, administration, management, and product and business processes [6]. This guidance offers a comprehensive approach to measuring the internal and external factors that can influence business innovation. It considers previous ad hoc guidance on measuring innovation in developing countries [6].

The current literature has explored numerous factors that have the potential to drive innovation. Innovation drivers in firms have been elaborated from various perspectives, from external [7] to internal ones. Some studies have also shown that the process of firm innovation is determined by a "mixture of internal and external drivers" [8]. Authors in [9] indicate that innovation within a firm is influenced by the expertise of experienced employees, the contribution of recent graduates, collaboration with other firms, competition in the product market, and the support provided by the government. Innovation strategy is a key determinant of success for innovative organizations, especially in driving business process innovation [10]. The unique attributes of firms may also give rise to different factors that drive the innovation process within those firms and may vary across industries [10], [11], [12].

According to this definition, some studies focus on the more general idea of business process innovation, but examine only some aspects of it, along with how it influences the financial performance of Serbian firms, especially family firms [13], [14]. Based on the authors' current knowledge, the particular determinants and drivers of business process innovation in Serbia, on which the present study focuses, have not been considered in previous research.

By providing empirical information on the factors that drive business process innovation in Serbian firms, this study aims to bridge the gap in the literature. The main objective is to assess the types of business process innovations promoted by Serbian entrepreneurial firms and to identify the factors that facilitate such innovations. Based on the main objective, two hypotheses are formulated.

H1:Business process innovations related to the development of products and services and their production are supported by Serbian companies.

H2:Factors such as the entrepreneur's human capital, organizational culture and the quality of collaboration among team members drive business process innovation in Serbian entrepreneurial firms.

Given these facts, this article focuses on the elements that can be examined as triggers for business process innovation in Serbian entrepreneurial enterprises. Specifically, the primary objective of this study is to identify the drivers of innovation and the specific forms of business process innovation encouraged by Serbian entrepreneurial enterprises. In the following sections, the theoretical background of the research is presented. Afterward, the methodology is presented, which describes the context and instrument, sampling and data analyses, followed by the results with discussion, and the conclusion.

THEORETICAL BACKGROUND

Both internal and external factors play a crucial role in shaping a company's innovative potential. Driven by external influences, in particular rapid technological progress, fierce competition and changing consumer demands, companies are forced to constantly improve their business operations and adapt to these ever-changing trends in the external environment [15].

Certain authors maintain that corporate strategy, organizational structure, leadership, resources and technology are the key factors that determine an organization's ability to manage innovation, emphasizing the fact that in this process, organizational culture is fundamental [16], [17]. Organizational structure is also a factor that determines innovation. It can be designed in such a way as to support, but also limit, innovative activity of companies. Innovation-oriented organizations are characterized by elements of organic design, mainly good communication, informal and decentralized decision-making, and adaptability in practices and procedures [18]. Authors in [19] point out that innovative capacity can be enhanced by a planned approach in terms of employees' development along with a reduction of close oversight and rigid guidelines. According to the authors in [19], fostering innovation requires a structured approach that emphasizes employee growth while limiting strict oversight and excessive supervision. The authors in [20] point out that excessive specialization can hinder creativity.

Authors in [21] believe that the growth of innovation is made possible by several important elements, one of which is organizational culture. For firms that aim to be creative, it is crucial to develop an organizational culture whose principles motivate people to act in an inventive manner. Numerous studies and analyses have demonstrated how this aspect of the internal environment affects an organization's financial results and innovative performance [16], [17]. Focusing on the relationship between teamwork and a dynamic team environment, the authors in [22] provided empirical and practical insights into how entrepreneurs and entrepreneurial teams can foster the distinctive characteristics of their team members.

It is recognized that the size of an organization is a decisive factor in its ability to innovate; however, there is no consensus among researchers about the patterns of this effect. Some authors argue that smaller systems are slower to adopt new tools and techniques to increase innovation performance than larger systems [23]. Authors in [24] highlight a positive correlation between organizational size and innovation, but note that there is no such correlation between the age of an organization and its innovative activities [24]. On the other hand, some other authors also put forward opposing views, arguing that larger companies tend to engage in fewer innovative ventures [25]. The author in [26] believes that company size is not an obstacle to innovation and entrepreneurship. Still, it is a type of operational management that should be considered. The same author believes that small and large systems ought to improve, expand and innovate their business and should therefore be entrepreneurially oriented [26], [27]. Authors in [28] argue that company size is not a factor that determines the ability of an organization to innovate, but they focus on the importance of employees' experience. Authors in [29] highlight the fact that innovative strategy is influenced by the relationship the organization has with its key stakeholders, i.e., innovation is encouraged with the increased number of customers, suppliers, and competitors. A greater commitment to research and development [30] and technology adoption [31] could be the most significant driver of innovation in the post-COVID-19 era, and company size and age are less important in addressing the current challenges firms face. Furthermore, innovation is seen as an essential prerequisite for organizational resilience, particularly when it comes to helping SMEs overcome economic challenges [32].

The primary focus of this research is business process innovation. This type of innovation can help minimize expenses, increase efficiency, facilitate knowledge acquisition and transfer, refine operational workflows, improve customer experience, consolidate competitive advantage [33], and reduce the company's overall cost of capital [34]. The authors in [35], consider that an entrepreneur's educational background, motivation and prior experience are key factors influencing process innovation in small companies. Additionally, the ability to tap into external sources of knowledge through business partnerships with other organizations also has a positive effect on process innovation in small companies [35]. The authors in [36] argue that company size has a more significant positive effect on process and organizational innovation, whereas competition has a slightly negative impact, especially when compared to product innovation.

The integration of internal and external knowledge sources plays a key role in fostering innovation in processes and products. According to the authors in [37], companies that initiate their innovation process and use diverse sources of information have a greater ability to develop innovative solutions. They further argue that process innovation depends primarily on suppliers as the main source of information, while product innovation is largely driven by customer insights. Certain studies have proven that cooperation with existing and potential users of services affects process innovation; namely, cooperation with existing users encourages incremental process innovation, while cooperation with potential users of services determines radical innovation [38]. While collaboration with universities and other research centers generally influences product innovation, the author in [39] claims that process innovation can be positively influenced by research and development collaboration with other companies.

Entrepreneurship has a favorable impact on an organization's potential to innovate [40], [26], [41], [42]. These two phenomena can be perceived as continuous processes, whose combination is extremely important for the success of companies in modern and dynamic business conditions. Tenacity positively corresponds with risky decisions, which is characteristic of entrepreneurial companies; while authors in [43] underline how organizational culture and structure contribute to supporting entrepreneurship.

In addition to factors such as organizational strategy, structure, culture, financial support for research and development, organizational learning, support and business processes, creativity, motivation and leadership are also key factors in promoting innovation [44], as well as quality management [45]. Certain studies prove a positive correlation between human capital and the characteristics of entrepreneurs on the success of an organization [46], [47], [48], demonstrating the interdependence between entrepreneurial competencies, innovation, and business success [24]. The author in [46] argues that certain aspects of entrepreneurial orientation (risk-taking, proactivity, competitive intensity, autonomy, and customer-driven strategy) influence innovation, and when accompanied by organizational culture, these factors can encourage creativity, as well as the extent to which innovative ideas can be developed and implemented. Authors in [49] believe that entrepreneurial creativity plays a crucial role in shaping innovation outcomes. The innovation potential of a company is positively influenced by creativity, whereby the interdependence is particularly pronounced in a dynamic business environment [50]. Authors in [51] point to the interdependence between the nature of opportunities and entrepreneurial motivation. The nature of opportunities affects entrepreneurial motivation, but entrepreneurial motivation can also influence the opportunity recognition process.

Certain studies suggest that entrepreneurs' innovation is determined by factors such as education and self-confidence, but also by the environment in which an individual operates. A higher level of education enhances the capacity to anticipate and perceive opportunities, as well as the effectiveness of entrepreneurial ventures [42]. Entrepreneurs in leading global economies are more likely to be involved in innovative ventures, although the distribution of innovative entrepreneurship varies by nation [48], [53].

METHODOLOGY

CONTEXT AND INSTRUMENT

The questionnaire contains eight questions relating to business process innovation. These items were taken from various indicators from the process perspective of the Balanced Scorecard [54] and the study by [55], which examined the impact of product and process improvements on small business growth. In addition, the items were tailored to the context of Serbian companies.

To establish which factors drive business process innovation in Serbian entrepreneurial firms, 16 survey items were employed to measure the entrepreneur's human capital (seven items), organizational culture (five items), and quality of collaboration among team members (four items).

Similar to studies conducted by [56] and [57], human capital is divided into three categories: owner's work experience, tenacity, and intrinsic motivation. The owner's work experience denotes the total number of years of professional experience, work experience in management positions, and work experience in the industry to which the entrepreneurial firm belongs. Besides prior work experience, the owner's tenacity represents an important component of human capital, especially in the first years of operation when procedures and routines in an entrepreneurial firm are still underdeveloped. The owner's tenacity was measured with two survey items proposed by [58].

Authors in [56] believe that entrepreneurs driven by intrinsic motivation are more successful than those driven by extrinsic motivation. The main reasons why internally motivated entrepreneurs establish companies are the desire to realize their personal ideas and to be independent. On the other hand, extrinsically motivated entrepreneurs start businesses because they cannot find better jobs. Therefore, the owner's intrinsic motivation is an indispensable human capital element, which is measured in this study with two survey items.

Although the organization's culture is created by all its members, the founders are those who initiate the process by instilling their values, beliefs, and attitudes [56]. The quality of organizational culture was measured by items proposed by [59]. The authors investigated the impact of cultural elements on company performance and showed that an organizational culture that emphasizes participation, adaptability and internal cohesion has a positive influence on a company's success. [59].

Entrepreneurial firms are usually managed by more than one individual, and therefore the quality of the interaction of the entrepreneurial team is essential for the firm's survival and growth. Team interaction was measured with survey items adopted from [60]. The authors showed that effective team interaction, defined by communication, coordination and cohesion, has a positive influence on the success of new companies [60].

Except for the question regarding the owner's work experience—where respondents provided the number of years—all survey items used a five-point Likert scale (1 = Strongly disagree to 5 = Strongly agree). Principal Component Analysis (PCA) was applied to group survey items into categories of business process innovation and its drivers. Correlation and multiple regression analyses were then conducted to identify the key factors fostering business process innovation in Serbian entrepreneurial firms.

In the multiple regression analysis, the dependent variables represented different types of business process innovation, while the independent variables encompassed various innovation drivers. Additionally, three control variables were taken into account: firm size (micro or small) and industry type (manufacturing, trade, or services). Manufacturing firms served as the base group, with two dummy variables created for trade and service companies.

SAMPLING

The final sample consists of 172 active companies founded in 2015 that fit the definition of an entrepreneurial firm provided by [61]. Researchers investigating the contribution of entrepreneurs to economic development have found that they produce innovations more efficiently than other companies and that the quality of their innovations is also better [61]. According to these authors, an entrepreneurial firm is characterized as a company that meets at least one of the following criteria: (1) founded within the past seven years, (2) employs fewer than 100 people, or (3) is new to the market. In the surveyed sample, all firms were younger than seven years and had fewer than 100 employees, with the largest employing 55 people.

The database, comprising 1,352 companies from various industries founded in 2015, was obtained from the Ministry of Economy of the Republic of Serbia. The questionnaire was sent to 1,147 email addresses of those companies' founders. After four reminders, 172 valid responses were received, indicating a response rate of 15%. Table 1 presents descriptive statistics for financial performance indicators for the year 2021 for the 172 entrepreneurial firms whose founders completed the survey.

Table 1. Financial performance indicators for the year 2021

Descriptive Statistics	ROA	ROE	Net Profit Margin	Operating Margin	Number of employees
Mean	9%	23%	2%	3%	11
Std. Deviation	20%	34%	15%	16%	11
Median	7%	16%	2%	4%	7
Minimum	-94%	-117%	-85%	-101%	1
Maximum	102%	127%	80%	64%	55
N	172	156	172	172	170

Source: Authors' research

Of the companies participating in the study, 17 reported net losses and had negative ROE and net profit margin values. A significantly larger number, 30 companies, reported negative operating profit, leading to negative ROA and operating margin values. Nevertheless, most entrepreneurial firms in the study were profitable, with an average of 11 employees.

Given the diverse sectoral structure of the final sample, as classified under the Statistical Classification of Economic Activities in the European Community (NACE Rev. 2) [62], the companies were categorized into three groups: Manufacturing, Trade, and Service enterprises. Manufacturing companies include those from the Manufacturing and Construction sectors, while trade companies consist of businesses in the Wholesale and Retail Trade sector. Service companies encompass firms from all other sectors, including Transportation and Storage, Accommodation and Food Service, Information and Communication, Financial and Insurance Activities, Real Estate, Professional, Scientific, and Technical Activities, Administrative and Support Services, Education, Human Health and Social Work, and Other Service Activities. The final sample comprises 49 manufacturing, 43 trade, and 80 service companies.

In terms of company size, 37 companies in the sample are small, while 135 are micro companies. As for their geographical distribution, 71 companies are registered in Belgrade, 18 in Novi Sad and the rest in other Serbian municipalities.

DATA ANALYSIS

A principal component analysis (PCA) with orthogonal rotation (varimax) was performed independently on eight survey items related to business process innovation, seven items concerning human capital, five items pertaining to organizational culture, and four items related to team interaction.

The Kaiser-Meyer-Olkin (KMO) measure confirmed good sampling adequacy for the analysis, with values of 0.843 for business process innovation, 0.601 for human capital, 0.764 for organizational culture, and 0.624 for team interaction. Bartlett's Test of Sphericity ($\chi^2(28) = 490.700$, $p < 0.001$; $\chi^2(21) = 231.000$, $p < 0.001$; $\chi^2(10) = 182.036$, $p < 0.001$; $\chi^2(6) = 257.413$, $p < 0.001$) indicated that correlations between variables were sufficiently large for Principal Component Analysis (PCA). Table 2 presents the factor loadings for the extracted factors representing different types of business process innovation. Following the criteria in [63], the threshold for factor loadings was set at 0.4, and only loadings above this threshold are reported

Table 2. Exploratory factor analysis results for business process innovation constructs

Item	Rotated Factor Loadings	
	Production of goods or services	Product or service development
1. Innovations that significantly reduce operating costs are introduced in our firm.	0.83	
2. Innovations that greatly shorten the time between ordering and delivery are introduced in our firm.	0.78	
3. Routines that enable more efficient operations are established in our firm.	0.78	
4. Innovations that significantly improve the firm's processes are introduced in our firm.	0.74	0.43
5. Innovations that significantly expedite the development of products or services are introduced in our firm.		0.83
6. Innovations that enable more efficient operations are introduced in our firm.		0.73
7. The modern technology is essential for developing our products or services.		0.67
8. Innovations that significantly expedite responding to customer complaints are introduced in our firm.		0.58
Eigenvalues	2.73	2.34
% of variance	34.11	29.28
Cronbach's Alpha	0.84	0.72

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Source: Authors' research

Eigenvalues were calculated for each component in the data, and two components had eigenvalues above Kaiser's criterion of one, indicating that two factors were extracted. In the next step, the content of survey items loaded into the same factor was analyzed to identify common themes. Survey items with high loadings on the first factor suggest it reflects Business Process Innovations Related to the Production of Goods or Services. The second factor is labeled Business Process Innovations Related to Product or Service Development. The two retained factors together explain 63.40% of the variance in the data. Cronbach's Alphas for both factors are above the threshold of 0.7 [63], indicating high internal consistency of the measurement items.

Table 3 presents factor loadings for three extracted factors representing sub-components of an entrepreneur's human capital: the owner's work experience, tenacity, and intrinsic motivation. Like in the previous case, the cut-off point for factor loadings was set at 0.4.

Table 3. Exploratory factor analysis results for human capital constructs

Item	Rotated Factor Loadings		
	Owner's work experience	Tenacity	Intrinsic motivation
1. The number of years of professional experience at the time the company was founded.	0.85		
2. The number of years of professional experience in the sector to which the company belongs at the time of its establishment.	0.82		
3. The number of years of professional experience in management positions at the time the company was founded.	0.81		
4. I can remember many instances where I have stuck to my work while others have given up.		0.87	
5. I continue to work hard regardless of whether I am supported by others.		0.85	
6. One of the main reasons I decided to start a business was the desire for independence.			0.85
7. One of the main motivations for starting my business was to realise my ideas.			0.77
Eigenvalues	2.04	1.61	1.37
% of variance	29.20	23.06	19.51
Cronbach's Alpha	0.73	0.69	0.58

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Source: Authors' research

The extracted sub-components of the entrepreneur's human capital had eigenvalues above Kaiser's criterion of one, and, combined, they explained 71.76% of the variance. Generally, Cronbach's Alphas above 0.7 are considered acceptable, which is the case for the owner's work experience subscale. However, Cronbach's alpha increases with the number of variables (survey items), so it is possible to obtain high values, not because measurement instruments have good reliability, but because many variables form a construct. Given that owner's tenacity and intrinsic motivation both consist of only two items, lower Cronbach's Alphas are expected. Therefore, the owner's tenacity subscale has good reliability. However, the reliability of the owner's intrinsic motivation subscale is relatively low. Table 4 presents the results of the exploratory factor analysis for organizational culture.

Table 4. Exploratory factor analysis results for organizational culture construct

Item	Factor Loadings
	Organizational culture
1. Employees mostly agree with the decisions made in the company.	0.83
2. The way decisions are made is predictable and consistent.	0.71
3. The firm quickly adapts its organizational structure to changes in the environment.	0.70
4. Employees performing different tasks actively cooperate.	0.69
5. Most employees are involved in making important decisions.	0.60
Eigenvalues	2.52
% of variance	50.35
Cronbach's Alpha	0.74

Note: Extraction Method: Principal Component Analysis.

Source: Authors' research

Eigenvalues were calculated for each component in the data, and one component had an eigenvalue above Kaiser's criterion of one (2.52). Accordingly, one factor representing organizational culture was extracted. The retained factor explains 50.35% of the variance in the data. All items have high factor loadings, suggesting high correlations between the extracted factor and survey items. Cronbach's Alpha indicates good reliability of the measurement scale. Table 5 presents the exploratory factor analysis results on the quality of interaction among entrepreneurial team members.

Table 5. Exploratory factor analysis results for the quality of team interaction construct

Item	Factor Loadings
	Team interaction
1. Entrepreneurial team members communicate excellently.	0.83
2. The information shared by team members is accurate and precise.	0.81
3. Working in an entrepreneurial team is the highest priority for all members.	0.73
4. All members are fully integrated into the entrepreneurial team.	0.72
Eigenvalues	2.40
% of variance	59.97
Cronbach's Alpha	0.76

Note: Extraction Method: Principal Component Analysis.

Source: Authors' research

Like in the previous case, one component had an eigenvalue over Kaiser's criterion of one (2.40), so one factor representing the quality of team interaction was extracted. That factor explains 59.97% of the variance in the data. Factor loadings suggest high correlations between all survey items and the extracted factor. Cronbach's Alpha exceeds the 0.7 threshold, indicating high reliability of the measurement items.

Before conducting multiple regression analysis, a correlation analysis was performed to examine the relationships between two types of business process innovation and potential innovation drivers, including the entrepreneur's human capital (owner's work experience, tenacity, and intrinsic motivation), organizational culture, and team interaction. Table 6 presents the Pearson correlation coefficients.

Table 6. Correlations coefficients

Type of business process innovation		Owner's work experience	Owner's tenacity	Owner's intrinsic motivation	Team interaction	Organizational culture
Production of goods or services	Pearson Correlation	0.10	0.08	-0.03	0.48***	0.52***
	Sig.	0.22	0.32	0.73	0.00	0.00
	N	153	153	153	149	150
Product or service development	Pearson Correlation	-0.11	0.33***	0.09	0.27***	0.39***
	Sig.	0.17	0.00	0.25	0.00	0.00
	N	153	153	153	149	150

*Note: *** p< 0.01*

Source: Authors' research

A positive and statistically significant correlation was found between business process innovations related to the production of goods or services and both the quality of entrepreneurial team interaction and organizational culture. Similarly, business process innovations related to product or service development were positively and significantly correlated with the owner's tenacity, team interaction, and organizational culture.

The factors that showed positive correlations with both types of business process innovation were subsequently used as independent variables in a regression analysis to determine which factors drive business process innovation in Serbian entrepreneurial firms.

RESULTS AND DISCUSSION

Company founders assessed eight survey items about business process innovation on a five-point Likert scale. Principal component analysis (PCA) revealed that innovations that Serbian entrepreneurial firms introduce could be classified into two categories: (1) business process innovations related to the production of goods or services and (2) business process innovations related to product or service development. Table 7 presents descriptive statistics for these two innovation types.

Table 7. Descriptive statistics for survey items

Item	Mean	Introduced an innovation	Item	Mean	Introduced an innovation
Item 1	3.43	49%	Item 5	3.64	56%
Item 2	3.80	66%	Item 6	3.74	60%
Item 3	3.86	67%	Item 7	3.96	70%
Item 4	3.70	64%	Item 8	3.98	74%
Production of goods or services	3.70	62%	Product or service development	3.83	65%

Source: Authors' research

The results indicate that 62% of the companies introduced some kind of business process innovation related to the production of goods or services. More precisely, 49% of the company founders reported having introduced innovations that significantly reduce operating costs in their companies, 66% reported introducing innovations that considerably reduce the time that elapses from ordering and delivery, and 64% reported introducing innovations that significantly improve their firm's processes. In addition, 67% of them reported having established routines that allowed their companies to operate more efficiently.

The results also show that 65% of companies have introduced some type of business process innovation related to product or service development. Specifically, 56% of startups reported implementing innovations that significantly accelerate product or service development, while 60% introduced innovations that enhance operational efficiency. Additionally, 74% reported innovations that improve the response time to customer complaints, and 70% emphasized the importance of modern technology in product or service development. These results indicate that hypothesis H1 cannot be rejected.

Multiple regression analysis (Eq. 1 and 2) was conducted to identify the key factors driving business process innovation in Serbian entrepreneurial firms. In Model 1, the dependent variable represents business process innovations related to the production of goods or services, while in Model 2, it represents business process innovations related to product or service development (Table 8). Independent variables are different innovation drivers that were found to be correlated with those two innovation types, while control variables are company size and industry type.

Model 1 is:

$$y_i = \beta_0 + \beta_1 team_i + \beta_2 culture_i + \beta_3 small_i + \beta_4 trade_i + \beta_5 services_i + u_i \quad (1)$$
$$i = 1, 2, \ldots, n$$

Model 2 is:

$$y_i = \beta_0 + \beta_1 tenacity_i + \beta_2 team_i + \beta_3 culture_i + \beta_4 small_i + \beta_5 trade_i + \beta_6 services_i + u_i \quad (2)$$
$$i = 1, 2, \ldots, n$$

Table 8. Multiple regression analysis

Model		Coef.	Std. Error	t	Sig.
1	(Constant)	0.199	0.125	1.59	0.114
	Quality of team interaction	0.191**	0.087	2.19	0.030
	Organizational culture	0.375***	0.089	4.19	0.000
	Small	-0.117	0.149	-0.79	0.433
	Trade	-0.043	0.189	-0.23	0.819
	Services	-0.219	0.146	-1.50	0.135
2	(Constant)	-0.264*	0.160	-1.65	0.100
	Owner's tenacity	0.233***	0.079	2.95	0.004
	Quality of team interaction	0.149	0.096	1.55	0.124
	Organizational culture	0.244**	0.095	2.56	0.012
	Small	0.358*	0.182	1.97	0.051
	Trade	-0.082	0.216	-0.38	0.704
	Services	0.413**	0.184	2.25	0.026
Model description		**F**	**Prob > F**	**R^2**	**Adj. R^2**
Model 1		9.52	0.000	0.307	n/a
Model 2		6.98	0.000	0.237	0.203

*Note: ***, **, *, p<0.01, p<0.05, p<0.1, respectively*

Source: Authors' research

Breusch-Pagan/Cook-Weisberg test was used for testing the assumption of homoskedasticity: $\chi2(1) = 18.58$, $p < 0.001$ for Model 1, and $\chi2(1) = 0.18$, $p = 0.667$ for Model 2. Since the problem with heteroskedasticity was found only in Model 1, ordinary least squares (OLS) with heteroskedasticity robust standard errors were used in that model.

In Model 1, two independent variables have a positive and statistically significant influence on the dependent variable. Namely, the quality of the interaction of the entrepreneurial team ($p = 0.030$), which is in line with the findings of [22] and organizational culture ($p = 0.000$) have a positive impact on business process innovations related to the production of goods or services. Organizational culture is an important internal factor in the innovative design of organizations, regardless of whether it involves process innovation or product innovation [64], [43], [16], [17], [46].

In Model 2, two independent variables, along with two control variables (small and service company), are statistically significant. Specifically, the owner's tenacity ($p = 0.004$), which is in line with the conclusions drawn by [65], [66], and organizational culture ($p = 0.012$), which is in accordance with [21], [66] have a positive impact on business process innovations related to product or service development.

Hypothesis H2 cannot be rejected, as the findings indicate that organizational culture positively influences both business process innovation related to the production of goods or services and business process innovation related to the development of products or services. Additionally, the owner's persistence—an aspect of the entrepreneur's human capital—has a positive impact on business process innovation related to product or service development, while the quality of interaction within the entrepreneurial team has a positive effect on the innovation of business processes in the production of goods or services.

In addition, small firms ($p = 0.051$) introduced on average a higher number of business process innovations related to product or service development than micro firms. This is also true for service companies ($p = 0.026$), which, on average introduced more business process innovations related to product or service development than manufacturing or trade companies. Manufacturing and trade companies, on average, introduced the same number of innovations. This is consistent with the findings of [52].

CONCLUSION

This paper examines the key factors driving business process innovation in Serbian entrepreneurial firms. The study identifies two perspectives on business process innovation: innovations related to product or service development and those related to the production of goods or services.

The most significant factors influencing business process innovation in the production of goods or services are the quality of team interactions and organizational culture. Firms that foster participation,

adaptability, and internal coherence, along with effective communication, coordination, and cohesion among team members, are more likely to implement such innovations.

In contrast, business process innovation in product or service development is primarily driven by the owner's persistence and organizational culture. Determined entrepreneurs who cultivate an organizational culture characterized by commitment, flexibility, and internal cohesion are more likely to introduce innovations in product or service development.

The practical implications of these findings suggest that entrepreneurial firms should actively cultivate an organizational culture that emphasizes open communication, adaptability, and team cohesion, as these factors significantly drive innovations in production processes. In addition, entrepreneurs should strengthen their personal resilience and determination, as these traits are particularly influential in fostering innovations in product or service development. To enhance innovation potential, firms could implement targeted training programs that strengthen team interaction skills and support leadership development, creating an environment that sustains continuous innovation and long-term growth.

These findings provide valuable insights beyond Serbia, particularly for understanding business process innovation in entrepreneurial enterprises within countries with similar national innovation systems, such as post-communist nations. While the impact of innovation drivers varies across countries due to socio-economic differences, this warrants further detailed investigation.

While this research provides important information about what motivates business process innovation in Serbian companies, several limitations must be acknowledged. First, the study sample is geographically limited to Serbia. This geographic focus may limit the applicability of the results to entrepreneurial situations in other countries, especially those with different socio-economic conditions. This means that the drivers identified here may not be fully representative of global entrepreneurial ecosystems. Furthermore, the study relies primarily on self-reporting by the entrepreneurs surveyed, which introduces potential biases such as social desirability that could affect the accuracy of responses. Furthermore, the drivers of business innovation may go beyond those examined in this study and involve a more complex interplay of additional factors beyond its scope.

ACKNOWLEDGMENTS

Under contract number 451-03-136/2025-03, the Ministry of Science, Technological Development, and Innovation of the Republic of Serbia provided funding for the study described in this paper.

REFERENCES

[1] Zhao, F. (2005). Exploring the synergy between entrepreneurship and innovation. International Journal of Entrepreneurial Behavior & Research 11(1), pp. 25-41. https://doi.org/10.1108/13552550510580825

[2] Crumpton, M.A. (2012). Innovation and entrepreneurship. The Bottom Line 25(3), pp. 98-101. https://doi.org/10.1108/08880451211276539

[3] Hindle, K. (2009). The relationship between innovation and entrepreneurship: easy definition, hard policy. In: 6th AGSE International Entrepreneurship Research Exchange, 3-6 February, Adelaide, South Australia, Australia. http://www.kevinhindle.com/publications/J4.2009-AGSE-Hindle-Inn-Ent-Pol.pdf

[4] Piñeiro-Chousa, J., López-Cabarcos, M., Romero-Castro, N., & Pérez-Pico, A. (2020). Innovation, entrepreneurship and knowledge in the business scientific field: Mapping the research front. Journal of Business Research, 115, 475-485. https://doi.org/10.1016/j.jbusres.2019.11.045.

[5] Janssen, M., Stoopendaal, A. M. V. and Putters, K. (2015). Situated novelty: introducing a process perspective on the study of innovation. Research Policy 44(10), pp. 1974–1984. https://doi.org/10.1016/j.respol.2015.06.008

[6] OECD/Eurostat. (2018). Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation. In Handbook of Innovation Indicators and Measurement. https://doi.org/10.1787/9789264304604-en

[7] Li, J., Xia, J. and Zajac, E. J. (2018). On the duality of political and economic stakeholder influence on firm innovation performance: Theory and evidence from Chinese firms. Strategic Management Journal 39(1), pp. 193–216. https://doi.org/10.1002/smj.2697

[8] Cai, W., and Zhou, X. (2014). On the drivers of eco-innovation: empirical evidence from China", Journal of Cleaner Production, 79, pp. 239–248. https://doi.org/10.1016/j.jclepro.2014.05.035

[9] Rao, S., Ang, J. and Wang, W. (2002). The Importance of Skills for Innovation and Productivity. International Productivity Monitor 4, pp. 15–26.

[10] Karabulut, A. T. (2015). Effects of Innovation Types on Performance of Manufacturing Firms in Turkey", Procedia - Social and Behavioral Sciences, 195, pp. 1355–1364. https://doi.org/10.1016/j.sbspro.2015.06.322

[11] Abela, A., Hoxley, M., McGrath, P. and Goodhew, S. (2013). An Investigation into the Practical Application of Residential Energy Certificates. In: Hakansson, A., Höjer, M., Howlett, R., Jain, L. (eds), Sustainability in Energy and Buildings, Smart Innovation, Systems and Technologies, 22, Springer, Berlin, Heidelberg, pp. 491-499. https://doi.org/10.1007/978-3-642-36645-1_46

[12] Morris, T., Smets, M. and Greenwood, R. (2015). In pursuit of creative compliance: innovation in professional service firms. In Handbook of Service Business, Edward Elgar Publishing, pp. 301–315. https://doi.org/10.4337/9781781000410.00025

[13] Paunović, M., Mosurović Ružičić, M., & Lazarević Moravčević, M. (2022a). Business process innovations in family firms: evidence from Serbia. Journal of Family Business Management. https://doi.org/10.1108/JFBM-03-2022-0044

[14] Paunović, M., Lazarević-Moravčević, M., & Mosurović Ružičić, M. (2022b). Business Process Innovation of Serbian Entrepreneurial Firms. Economic Analysis. https://doi.org/10.28934/ea.22.55.2.pp66-78

[15] Lazarević Moravčević, M., Paunović, M. and Mosurović Ružičić, M. (2022). Koncept otvorenih inovacija u funkciji unapređenja inovacionih kapaciteta MSP u Srbiji. In Mosurović Ružičić, M., Lazarević Moravčević, M. and Paunović, M. (Eds.), Nauka i inovacije kao pokretači privrednog razvoja, Institut ekonomskih nauka, Belgrade, pp. 21-36.

[16] Živković L., Štrbac, D., & Paunović M. (2024). Digitalisation, growth vision and gender equality practices in the machines and equipment sector – Does gender matter?. Journal of Women's Entrepreneurship and Education, 1-2, 157-176. https://doi.org/10.28934/jwee24.12.pp157-176

[17] Qudah, MAA. (2018). The Impact of Entrepreneurship Initiatives in Enhancing Creativity and Innovation", International Journal of Business and Management 13(7), pp.157-168. https://doi.org/10.5539/ijbm.v13n7p157

[18] Özsomer, A., Calantone, R.J. and Di Bonetto, A. (1997). What makes firms more innovative? A look at organizational and environmental factors. Journal of Business & Industrial Marketing 12(6), pp. 400-416. https://doi.org/10.1108/08858629710190259

[19] Dekoulou, P. and Trivellas, P. (2017). Organizational structure, innovation performance and customer relationship value in the Greek advertising and media industry. Journal of Business & Industrial Marketing 32(3), pp. 385-397. https://doi.org/10.1108/JBIM-07-2015-0135

[20] Hassan, M., Anwar, MA., Rafique, Z. and Saeed, A. (2014). The Impact of Organizational Structure on Employees' Creativity: A Sector Based Study. Information and Knowledge Management 4(8), pp. 109-126.

[21] Pineda-Celaya L, Andrés-Reina M-P, González-Pérez M. (2022). Measuring the Innovation Orientation of Organizational Culture: An Application to the Service Provider Companies of the State-Owned Oil Company PEMEX in the Southeast of Mexico. Sustainability 14(4):2035. https://doi.org/10.3390/su14042035

[22] Deng,C., Gulseren, D., Isola, C., Grocutt, K & Turner, N. (2022). Transformational leadership effectiveness: an evidence-based primer, Human Resource Development International, DOI: 10.1080/13678868.2022.2135938

[23] Maravelakis, E., Bilalis, N., Antoniadis, A., Jones, K. A. and Moustakis, V. (2006). Measuring and benchmarking the innovativeness of SMEs: a three-dimensional fuzzy logic approach. Production Planning & Control 17(3), pp. 283–292. https://doi.org/10.1080/09537280500285532

[24] Umar, A., Omar, C., Hamzah, MSG. (2018). The Mediating Effect of Innovation on Entrepreneurial Competencies and Business Success in Malaysian SMEs. International Business Research 11(8), pp.142-153. https://doi.org/10.5539/ibr.v11n8p142

[25] Dess, G., Lumpkin, G., and Eisner, A. (2007). Strategijski menadžment. Data Status, Belgrade.

[26] Drucker, P. (2003). Moj pogled na menadžment. Adižes, Novi Sad.

[27] Drucker, P. (2005). Upravljanje u novom društvu. Adižes, Novi Sad.

[28] Romero, I. and Martínez-Román, JA. (2012). Self-employment and innovation. Exploring the determinants of innovative behavior in small businesses. Research Policy 41(1), pp. 178-189. https://doi.org/10.1016/j.respol.2011.07.005

[29] Genis-Gruber, A. and Öğüt, H. (2014). Environmental factors affecting innovation strategies of companies: customers and suppliers effect. Procedia - Social and Behavioral Sciences 150, pp. 718 – 725. https://doi.org/10.1016/j.sbspro.2014.09.033

[30] Van Auken, H. E., Fotouhi Ardakani, M., Carraher, S. and Khojasteh Avorgani, R. (2021). Innovation among entrepreneurial SMEs during the COVID-19 crisis in Iran. Small Business International Review 5(2), pp. 1-17. https://doi.org/10.26784/sbir.v5i2.395

[31] Milovanović, V., Chong Ka Leong, D. & Paunović, M. (2022). Benefits from adopting technologies for the hotel's supply chain management. Hotel and Tourism Management, 10(2), 91-103. https://doi.org/10.5937/menhottur2202091M

[32] Vujičić, S., Radović Marković, M., Nikitović, Z., & Lapčević, G. (2021). The innovative activities for the resilience of the SMEs in the republic of Serbia. Journal of Entrepreneurship and Business Resilience, 4(1), 15–24. Retrieved from https://jebr.fimek.edu.rs/index.php/jebr/article/view/29

[33] Piening, E. P. and Salge, T. O. (2015). Understanding the antecedents, contingencies, and performance implications of process innovation: a dynamic capabilities perspective. Journal of Product Innovation Management 32(1), pp. 80–97. https://doi.org/10.1111/jpim.12225

[34] Kočović, J., Paunović, M., & Jovović, M. (2016). Determining the discount rate: The case of oil industry in Serbia. Ekonomika Preduzeća, 44(5-6), 371-381. https://doi.org/10.5937/ekopre1606371K

[35] Plotnikova, M., Romero, I. and Martínez-Román, J.A. (2016). Process innovation in small businesses: the self-employed as entrepreneurs. Small Business Economics 47, pp. 939-954. https://doi.org/10.1007/s11187-016-9743-8

[36] De Mel, S., McKenzie, D. and Woodruff, C. (2016). Innovative firms or innovative owners? Determinants of innovation in micro, small, and medium enterprises. World Bank Policy Research Working Paper No. 4934. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1407952

[37] Gómez, J., Salazar, I. and Vargas, P. (2016). Sources of Information as Determinants of Product and Process Innovation. PLoS ONE, 11(4), pp. 1-15. https://doi.org/10.1371/journal.pone.0152743

[38] Ashok, M., Narula, R. and Martinez-Noya, A. (2016). How do collaboration and investments in knowledge management affect process innovation in services?. Journal of knowledge management 20(5), pp. 1004-1024. https://doi.org/10.1108/JKM-11-2015-0429

[39] Medda, G. (2020). External R&D, product and process innovation in European manufacturing companies", The Journal of Technology Transfer 45, pp 339-369. https://doi.org/10.1007/s10961-018-9682-4

[40] Schumpeter, J. (1934). The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle. Harvard University Press, Cambridge, MA.

[41] Carte, S., and Dylan, J. (2006). Enterprise and Small Business – Principles, Practice and Policy, Pearson Education Limited, UK.

[42] Cui, F., & Song, J. (2022). Impact of Entrepreneurship on Innovation Performance of Chinese SMEs: Focusing on the Mediating Effect of Enterprise Dynamic Capability and Organizational Innovation Environment. Sustainability. https://doi.org/10.3390/su141912063.

[43] Slevin, D.P. and Covin, J.G. (1990). Juggling entrepreneurial style and organizational structure: how to get your act together. Sloan Management Review 31(2), pp. 43-53.

[44] Deni, MV. and Gandhi, AV. (2022). Understanding the drivers of innovation in an organization: a literature review. International Journal of Innovation Science 14(3/4), pp. 476-505. https://doi.org/10.1108/IJIS-10-2020-0201

[45] Milovanović, V., Janošević, S. & Paunović, M. (2021). Quality management and business performance of Serbian companies. Ekonomika Preduzeća, 69(5-6), 345-356. https://doi.org/10.5937/EKOPRE2106345M

[46] Omerzel, DG. (2016). The Impact of Entrepreneurial Characteristics and Organisational Culture on Innovativeness in Tourism Firms", Managing Global Transitions, 14(1), pp. 93–110.

[47] Ugalde-Binda, N., F. Balbastre-Benavent, T. Canet-Giner, and N. Escribá-Carda (2014). The role of intellectual capital and entrepreneurial characteristics as innovation drivers. Innovar 24(53), pp. 41-60. https://doi.org/10.15446/innovar.v24n53.43793

[48] Álvarez, R. and Grazzi, M. (2018). Innovation and entrepreneurship in Latin America: What do we know? What would we like to know?. Estudios de Economía 45(2), pp. 157–171. https://boletincorteidh.uchile.cl/index.php/EDE/article/view/51337

[49] Ahlin, B., Drnovšek, M. and Hisrich, R. (2014). Entrepreneurs' creativity and firm innovation: the moderating role of entrepreneurial self-efficacy. Small Business Economics, 43, pp.101–117. https://doi.org/10.1007/s11187-013-9531-7

[50] Baron, R., Tang, J. (2011). The role of entrepreneurs in firm-level innovation: joint effects of positive affect, creativity, and environmental dynamism. Journal of Business Venturing 26(1), pp. 49–60. https://doi.org/10.1016/j.jbusvent.2009.06.002

[51] Hessels, J., Van Gelderen, M. and Thurik, R. (2008). Entrepreneurial aspirations, motivations, and their drivers. Small business economics 31, pp.323–339. https://doi.org/10.1007/s11187-008-9134-x

[52] Jafari-Sadeghi, V., Kimiagari, S. and Biancone, P.P. (2020). Level of education and knowledge, foresight competency and international entrepreneurship: A study of human capital determinants in the European countries. European Business Review 32(1), pp. 46-68. https://doi.org/10.1108/EBR-05-2018-0098

[53] Crudu, R. (2019). The role of innovative entrepreneurship in the economic development of EU member countries. Journal of Entrepreneurship, Management and Innovation 15(1), pp. 35-60. https://doi.org/10.7341/20191512

[54] Atkinson, A., Kaplan, R., Matsumura, E. and Young, S. (2012). Management accounting - Information for decision-making and strategy execution (6th ed.). Pearson Education, International edition.

[55] Wolff, J. A. and Pett, T. L. (2006). Small-firm performance: modeling the role of product and process improvements", Journal of Small Business Management 44(2), pp. 268–284. https://doi.org/10.1111/j.1540-627X.2006.00167.x

[56] Hormiga, E., Batista-Canino, R.M. and Sanchez-Medina, A. (2011). The role of intellectual capital in the success of new ventures. International Entrepreneurship and Management Journal 7(1), pp. 71-92. https://doi.org/10.1007/s11365-010-0139-y

[57] Peña, I. (2002). Intellectual capital and business start-up success. Journal of Intellectual Capital 3(2), pp. 180-198. https://doi.org/10.1108/14691930210424761

[58] Baum, J. R. and Locke, E. A. (2004). The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. Journal of Applied Psychology 89(4), pp. 587–598. https://doi.org/10.1037/0021-9010.89.4.587

[59] Denison, D. R., and Mishra, A. K. (1995). Toward a theory of organizational culture and effectiveness. Organization Science 6(2), pp. 204–223. https://doi.org/10.1287/orsc.6.2.204

[60] Lechler, T. (2001). Social interaction: a determinant of entrepreneurial team venture success. Small Business Economics 16, pp. 263–278. https://doi.org/10.1023/A:1011167519304

[61] Van Praag, C.M. and Versloot, P.H. (2007). What is the value of entrepreneurship? A review of recent research. Small Business Economics 29, pp. 351-382. https://doi.org/10.1007/s11187-007-9074-x

[62] Eurostat. (2008). NACE Rev. 2 – Statistical Classification of Economic Activities in the European Community, Office for Official Publications of the European Communities

[63] Field, A. (2009). Discovering statistics using SPSS (3rd ed.). SAGE Publications, London.

[64] Mosurović Ružičić, M. (2012). Organisation and innovation. Editor: Institut "Mihajlo Pupin". Beograd.

[65] Zeng, X., & Ouyang, Y. (2020). Entrepreneurship: Tenacity, Future Self-Continuity, and Inter-Temporal Risky Choice. Frontiers in Psychology, 11. https://doi.org/10.3389/fpsyg.2020.01647.

[66] Paunović, M., Milovanović, V., Štrbac, D., & Domazet, I. (2025). Intellectual capital as a driver of value creation in Serbian entrepreneurial firms. International Journal of Manpower, 46(1), 111-127. https://doi.org/10.1108/IJM-05-2024-0301

Article history:

Received 13 December 2023

First revision 9 November 2024

Second revision 19 March 2025

Accepted 1 April 2025