Business process innovations in family firms: evidence from Serbia

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Received 31 March 2022
Revised 3 June 2022
18 July 2022
21 September 2022
Accepted 21 September 2022

Abstract

Purpose – This paper aims to explore the innovation performance of Serbian family firms, the differences in the innovation performance between family and non-family firms as well as different family firms, and the relationship between business process innovation and customer satisfaction among family firms.

Design/methodology/approach – The sample consists of 207 valid responses from young Serbian companies from various industries founded in 2015 that published their financial statements in 2017. The statistical analysis involved descriptive statistics, reliability analysis, independent samples *t*-test, one-way ANOVA, and correlation analysis.

Findings – The study results indicate that family businesses in Serbia are innovation-oriented and that they introduced a number of innovations in business processes related to the production and distribution of goods or services and the development of products and business processes. The results also suggest that family and non-family firms are equally committed to introducing innovations in business processes. In addition, the study did not confirm significant differences in the performance of business process innovations among family firms in the manufacturing, trade, and service sectors. Finally, the results demonstrate that introducing business process innovations is positively associated with customer satisfaction and customer retention rate in Serbian family firms.

Originality/value – This paper presents the first comprehensive analysis of the innovation performance of Serbian family firms and can help policymakers assess the contribution of innovation to economic goals.

Keywords Family firms, Non-family firms, Innovation performance, Business process innovation, Serbia

Paper type Research paper

1. Introduction

In a dynamic and complex business environment, the propensity for innovative ventures, i.e. creating new products and processes and improving the existing ones is a basic factor of growth and development of any company, regardless of its size or activity (Joshi, 2010; Lazarević-Moravčević, 2014). Companies that apply innovations become more successful and profitable (Atkinson and Ezell, 2014) and more capable of creating a competitive advantage (Porter, 1997). On the other hand, companies that are not able to innovate tend to fail (Drucker, 1995).

Innovativeness is a process that includes all activities aimed at creating changes, whereas innovation presents the result of this process. As far back as the 1930s, Schumpeter (1934) outlined the importance of innovation as a driver of economic development. According to the author, economic development is driven by innovation in a dynamic process of "creative destruction", replacing old technologies with the new ones (Schumpeter, 1934).

Even though every organization needs innovation, there is empirical evidence that innovation ability is influenced by a number of factors (Kamien and Schwartz, 1995; Drucker, 2003; Dess *et al.*, 2007; Mosurović Ružičić, 2012) which determine how successful a company will be in the innovation process. Numerous studies have been conducted to identify the key characteristics of innovative companies, as well as possible differences in innovative abilities of different types of organizations. Similar to Llach and Nordqvist (2010), Chrisman and Patel (2012), Classen *et al.* (2014), Werner *et al.* (2018), Núñez-Cacho and Lorenzo (2020), the focus of this

Funding: This work is funded by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

2043-6238
DOI 10.1108/JFBM-03-2022-0044

research is on understanding the innovative ability of family firms. Research questions are organized to investigate the innovation performance of Serbian family firms, the differences in the innovation performance between family and non-family firms as well as different family firms, and the relationship between business process innovation and customer satisfaction among family firms. Liach *et al.* (2012) indicates that family firms are under-investing in innovation compared to non-family firms. Matzler *et al.* (2015) points out that family involvement in management can have a negative impact on innovation input and a positive influence on innovation output. Craig *et al.* (2014) proves that the relationships between proactivity, risk-taking, and innovation output differ in family and non-family firms.

The term innovation mainly refers to radical innovation. However, sometimes, higher profits are made through less risky, incremental innovation. According to Schumpeter (1934), radical innovations shape major economic changes, while incremental ones enable this process to be continuous. Radical innovations are determined by their potential to create and transform the market (OECD/Eurostat, 2018). At the same time, the evidence from literature shows that innovations in family firms are mostly incremental rather than radical. This could explain the decrease in their long-run competitiveness (Hu and Hughes, 2020).

The impact of a firm's size on innovation capacity has been considered in many studies. For instance, Dess *et al.* (2007) believe that smaller organizations are more innovation oriented. However, there is also evidence that there are significantly fewer innovation activities in SMEs compared to large companies (WIPO, 2010). Burns (2011) points out that few small firms introduce brand-new products into their product range due to resource constraint, so this role is more likely to be undertaken by larger firms. On the other hand, small firms often introduce products or services that are clearly differentiated from those of the competition. They are also more likely to innovate in terms of production and delivery methods, organization, customer service, etc.

Chua *et al.* (1999) consider that defining a family business is a challenging and complex task and indicate the need for separate observation of theoretical and operational definitions. The theoretical definition indicates the essential difference between family and non-family businesses. Managing a family business suggests establishing a clear boundary between "family managers" and "professional managers" with an orientation on developing the competencies for the growth of the family business. It includes comprehensive management of three different systems: the family, business, and ownership (Joshi and Srivastava, 2012; Joshi, 2017). Some scholars notice the difference between family firms and non-family firms regarding innovation performance as the consequences of special characteristics determined by an ownership structure (Abdulmuhsin and Tarhini, 2022).

Certain authors, on the other hand, investigated the relationship between innovation (process innovation, organizational innovation, and marketing innovation) and consumer satisfaction (Simon and Honore Petnji Yaya, 2012). Family firms could develop and sustain a competitive advantage based on product innovation if there were high motivation and management skills. Based on the experience of Indian family firm Microlit, Joshi and Srivastava (2015) point out the importance of customer-oriented product design for firms' success. The following research is a step forward because it examines the relationship between business process innovation and customer satisfaction in the context of family firms. Despite the importance of innovation for companies' development, there is still a lack of empirical studies in Serbia, especially in family firms.

The paper is structured as follows. Section 2 defines the theoretical framework for the research by exploring the relationship between innovation and firms' performance in general, continuing with focusing on family firms. Section 3 describes the research methodology, while Section 4 is dedicated to the sample description. The research findings are presented and discussed in Section 5, while Section 6 provides the main conclusions and recommendations for future research.

2. Theoretical framework

2.1 Innovation and firm performance

A great number of scholars analyzed the relationship between innovation and firm performance from various aspects. Some research studies showed a positive relationship between technological innovation (product and process innovation) and firm performance, but there is no evidence pointing to the relationship between non-technological innovation (organizational and marketing innovation) and firm performance (Atalay *et al.*, 2013). Some authors outlined the positive relationship between innovation and firm performance in the majority of industries (Mosurović-Ružičić *et al.*, 2018; Becker, 2020; Đuričin and Beraha, 2021). The positive influence of innovation on SMEs performance can be noticed (Joshi, 2010; Atalay *et al.*, 2013; Tuan *et al.*, 2016; Kijkasiwat and Phuensane, 2020; Le and Ikram, 2022). Even though some studies have found that companies' orientation toward innovation does not have a significant impact on their performance, research confirmed the positive relationship (Zainal, 2020).

In both theory and practice, great efforts have been made to create the indicators for monitoring the innovative business performance. Various initiatives have emerged due to the cooperation between different stakeholders within innovation system which relate to the development of innovation indicators. The most well-known source of information for measuring enterprise innovation performance (input/output-oriented indicators) is Community Innovation Survey (CIS) (Bačić and Aralica, 2016; Dziallas and Blind, 2019). CIS methodology, developed by the OECD and EUROSTAT, contributes to a better understanding of innovative behavior of companies by defining the indicators of innovative behavior which can determine the impact of innovation on employment, competitiveness, economic growth, forms of trade, etc. Additionally, the obtained data can further be used to construct various models for evaluating and comparing innovative performance between regions, industries, and countries (Mairesse and Mohnen, 2010). Many authors view innovations, competitive advantage, and business performance as a set of interrelated concepts and processes, and their interrelationship has been widely studied and thoroughly analyzed (Porter, 1997; Mairesse and Mohnen, 2010; Teece, 2010; Bessant *et al.*, 1997; Kijkasiwat and Phuensane, 2020; Kokeza and Paunović, 2021).

Innovative behavior of companies (Roberts and Amit, 2003; Silva and Leitto, 2007; Daim *et al.*, 2014; Bačić and Aralica, 2016) includes a large number of dimensions of innovation processes that according to the OECD methodology until 2018 was identified as (OECD/Eurostat, 2005): technological (product innovation and process innovation) and non-technological (marketing innovation and organizational innovation). The latest edition of the Oslo Manual, which has been methodologically improved to a large extent, distinguishes two types of innovations (OECD/Eurostat, 2018): product innovation and business process innovation. To continuously improve the chances for business success, it is necessary to explore not only the performance that an innovative company achieves, but also the processes according to which that performance has been achieved. Business innovation researches are focused on the innovation process at a company level. This, in fact, represents the way in which innovation investments turn into innovation results. There is an implicit link between research and development and investments in innovation on the one hand and the ability of firms to adopt and leverage the existing information within firms on the other (Daim *et al.*, 2014).

The innovative ability of a company is primarily determined by internal factors, but it is also significantly influenced by the external environment–political and institutional factors, research infrastructure, cultural and legal environment. According to Kamenković and Lazarević-Moravčević (2018), companies in Serbia do not fully use their innovative potential, which reduces the competitiveness of the Serbian economy. Recently, there have been positive trends in the field of innovative activity. Growing trend could be noticed in the

number of innovative companies and investments in research and development (WEF, 2019). Nevertheless, real progress in innovation ventures is lacking due to, among other things, insufficiently developed cooperation between the economy and the scientific research sector (Goverment of the Republic of Serbia, 2020). The USAID (2020) research indicates that the COVID-19 crisis has accelerated the process of transformation from traditional to digital business and encouraged business people in Serbia to be apply innovations.

2.2 Family business and innovation: some insights

A great deal of literature about the family business focuses on family rather than business performance (Sharma *et al.*, 1997). Within the context of innovation, the performance of family firms is more connected with new product development and market knowledge than with technological knowledge (Alberti and Pizzurno, 2013). There are also studies showing that innovation is important in both family and non-family firms. The literature in the field of economics increasingly points out to the importance of family firms in terms of economic development (Bennedsen *et al.*, 2007; Cailluet *et al.*, 2018), yet there is a great deal of controversy in theory and practice (Cesaroni *et al.*, 2021; Miller and Le Breton-Miller, 2021).

As for family firms, innovation has become an urgent choice. The need to analyze family firms apart from non-family ones in terms of strategy and innovation has been recognized in the literature (Yuan, 2019). Managing innovation is a great challenge for the management in family business firms since they have unique entrepreneurship characteristics based on specific resources – the relations in the family system. It could be observed as a strategic advantage, but also pose a danger (Fitz-Koch and Nordqvist, 2017; Lattuch, 2019; Tiberius *et al.*, 2021). For that reason, Casprini *et al.* (2020) point out the necessity to balance the need for strong internal control of the business and the need for internationalization, i.e. between stability and uncertainty. There is a relationship between innovation capabilities and socioemotional dimensions in family firms (Fitz-Koch and Nordqvist, 2017). The analysis of innovation in family firms is not only related to research and development and technological innovation, but also focused on all activities that enable firms to define and develop new products, services, and processes (Cesaroni *et al.*, 2021).

The relationship between intellectual capital and innovation of family firms has been perceived. The existence of the link between internal business processes based on knowledge and the competencies of human resources and innovation has been outlined as well (Grimaldi *et al.*, 2016). Family firms are characterized by unique social capital that includes intellectual, human, and financial capital. Human capital is a significant component, not only of entrepreneurial firms in general but also in family firms, as a result of employees mainly being family members (Steinerowska-Streb and Głód, 2020; Paunović, 2021). Some research highlights intellectual agility as an important component of intellectual capital and demonstrates a clear and distinct connection with the business innovativeness of small and medium-sized enterprises (Dabić *et al.*, 2021).

Family firms are the oldest and the longest-standing organizational forms (Cailluet *et al.*, 2018; Tiberius *et al.*, 2021). The long-term business orientation of family firms makes them sensitive to business risks because they want to pass on a significant amount of their assets to future generations. Moreover, business risks can negatively affect business decisions related to innovation. Some authors even suggest that family firms are less innovative and less prone to risks due to capital constraints and maintaining family closeness. The main challenge for today's family firms is how to create and implement innovations (Feninger *et al.*, 2019).

However, the latest official reports and literature show that family firms during crises, and even after periods of crisis, achieve higher profitability and growth rates compared to non-family firms. During the crisis caused by the COVID 19 pandemic, family firms proved to be more capable of dealing with the influence of the complex business environment unlike non-family firms (González and Pérez-Uribe, 2021). In order to mobilize to fight the crisis, family

firms showed a high degree of mobility, unusual creativity, and innovativeness (Cesaroni *et al.*, 2021; Le Breton-Miller *et al.*, 2021). During the pandemic, innovative family firms were forced to consider transforming their business (Schmid *et al.*, 2014; Yuan, 2019; Cucculelli and Peruzzi, 2020).

The main goal of this research is to investigate the innovation performance of Serbian family firms. Innovation performance represents all achievements and results derived from innovation. It includes all determinants of the development and diffusion of innovation that lead to superior innovative firm performance or market success (Robertson *et al.*, 2021). Considering that the latest edition of the Oslo Manual (OECD/Eurostat, 2018) recognizes two types of business innovation and the fact that the subject of this study is a small family firm, the research solely focuses on business process innovation. Specifically, it focuses on business process innovation related to the production and distribution of goods and services, and product and business process development activities.

3. Research methodology

The data about family firms were collected via a questionnaire in which the respondents assessed various statements on a five-point Likert scale (1-Strongly disagree; 2-Disagree; 3-Neither agree nor disagree; 4-Agree; 5-Strongly agree). The respondents received four questions about innovations in the production and distribution of goods or services and six questions about product and business process development innovations. Some of the questions were adopted from the study of Wolff and Pett (2006) and Denison and Mishra (1995), but they had to be modified to fit Serbian family firms' context and to be aligned with the new definition of business process innovation provided by OECD/Eurostat (2018).

Wolff and Pett (2006) investigated the role of product and process improvements on small-firm performance. The authors used four questions to understand the process improvement within a firm. Those questions were adopted and adapted for use in this study. Denison and Mishra (1995) analyzed the influence of cultural characteristics on firm performance. They found that organizational culture characterized by participation, adaptability, and internal consistency positively impact a company's success. One of the two questions that the authors used for measuring adaptability was adopted and modified for this study. Finally, five questions for measuring business process innovations were derived from several indicators within the Balanced Scorecard's process perspective (Atkinson *et al.*, 2012). Also, some scholars investigated the relationship between innovation (process innovation, organization innovation, marketing innovation) and consumer satisfaction from various perspectives (Simon and Honore Petnji Yaya, 2012).

Besides the questions about innovation activities, the respondents were asked whether their company is a family firm. In that way, the sample of family firms as well as the sample of non-family firms, which acted as a control group, were formed. Those two samples are similar in terms of the firm size measured by the number of employees (family members), industries in which firms operate, and territorial distribution of firms. The firms were also divided into three groups: manufacturing, trade, and service companies. The sample of family firms and a sample of non-family firms have the same number of manufacturing, trade, and service companies.

Following the main goal of the research, four specific goals are formulated. The first specific goal is to assess the innovation performance of Serbian family firms. Specifically, the performance of business process innovations related to the production and distribution of goods or services and product and business process development. The second specific goal is to investigate whether there are any differences in innovation performance between family and non-family firms that are similar in terms of size, industry, and geographic area.

Since the companies are divided into three groups, the third specific goal is to analyze whether there are any differences in innovation performance among manufacturing, trade,

and service family firms. Finally, since family firms have their unique characteristics such as altruism, ownership, etc., the fourth specific goal is to analyze the relationship between business process innovation and customer satisfaction among family firms. Based on the specific goals of the research, four research questions are posed:

RQ1. What are the innovation performance of Serbian family firms?

RQ2. Are there any differences in innovation performance between family and non-family firms in Serbia?

RQ3. Are there any differences in innovation performance among manufacturing, trade, and service family firms in Serbia?

RQ4. What is the nature of the relationship between business process innovation and customer satisfaction among family firms?

The statistical analysis involved descriptive statistics, reliability analysis, independent samples *t*-test, one-way ANOVA, and correlation analysis. The probability level is set at $p \leq 0.05$, and data is analyzed using SPSS v 23.

4. Sample description

The sample consists of young Serbian companies from various industries founded in 2015 that published their financial statements in 2017. According to Čokorilo *et al.* (2018), many companies did not survive the first two years of their existence. After that, the survival rate is much higher. For example, 8,180 companies were founded in 2015. Out of that number, only 4.966 companies survived and filed valid financial statements in 2017. Considering that some statements in the questionnaire measure the attitudes of most of the employees (family members), only companies with at least three employees were considered. There are 1,559 such companies and the authors tried to find the email addresses of all of them. In the end, 1,160 email addresses were found and the questionnaire was sent to them. The email included a cover letter and a questionnaire in the attachment. There were four reminders, and, in the end, 207 valid responses were received, which means that the response rate was 17.8%. The authors manually checked every company that completed the questionnaire to ensure that all companies participating in the study were still active.

Since the questionnaire included the question of whether a company is a family firm, out of 207 responses, 85 were from family firms and 122 were from non-family firms. After that, 37 responses from non-family firms were excluded from the research since those companies were very different from family firms that completed the survey in terms of size, industry, and geographic area. The final sample consists of 85 family firms and 85 non-family firms.

Table 1 shows the sectoral structure of the final sample according to the Statistical Classification of Economic Activities in the European Community (NACE Rev. 2), which was accepted in Serbia without any changes (Eurostat, 2008). Considering that the sectoral structure of the final sample was highly diverse, companies that took part in the study were classified into three groups: manufacturing, trade, and services.

Most of the firms in the sample are micro firms. Specifically, 78 are micro firms among family firms and 7 are small firms. Among non-family firms, there are 77 micro firms and 8 small firms. The average number of employees in both samples is 8. In terms of geographical distribution, in both samples, 42% of the firms are registered in Belgrade, and 8% in Novi Sad. The rest of the firms are registered in various municipalities across Serbia. The number of family and non-family firms is similar in each municipality.

Table 2 gives descriptive statistics for financial and customer-related performance indicators for family and non-family firms. Financial performance indicators were calculated from companies' annual financial statements for 2017. The sales revenue, operating profit,

Sectors	Family firms N	Family firms %	Non-family firms N	Non-family firms %
A. Manufacturing	*24*	*28%*	*24*	*28%*
1. Manufacturing	20	24%	20	24%
2. Construction	4	5%	4	5%
B. Trade	*23*	*27%*	*23*	*27%*
1. Wholesale and retail trade	23	27%	23	27%
C. Services	*38*	*45%*	*38*	*45%*
1. Transportation and storage	8	9%	4	5%
2. Information and communication	6	7%	10	12%
3. Professional, scientific, and technical activities	13	15%	13	15%
4. Accommodation and food service activities	4	5%	4	5%
5. Administrative and support service activities	2	2%	5	6%
6. Education	3	4%	0	0%
7. Other service activities	2	2%	2	2%
Total	*85*	*100%*	*85*	*100%*

Source(s): Author's research

Table 1. Companies that took part in the study

Financial and customer-related performance indicators		Mean	Std. Deviation	Median	Min	Max
Sales revenue (in thousands RSD)	Family	37,759	55,282	25,245	361	399,474
	Non-family	40,505	57,428	19,783	1,587	393,652
Operating profit (in thousands RSD)	Family	1,216	7,634	384	(8,193)	68,178
	Non-family	2,958	6,763	761	(19,589)	33,745
Net profit (in thousands RSD)	Family	1,069	6,160	265	(8,895)	54,208
	Non-family	2,273	5,843	470	(19,856)	28,706
ROA	Family	5%	72%	5%	−300%	201%
	Non-family	26%	46%	15%	−51%	324%
ROE	Family	61%	169%	49%	−862%	1,055%
	Non-family	64%	88%	55%	−274%	531%
D/E Ratio	Family	7.03	56.72	0.00	−1.40	523.23
	Non-family	0.78	4.17	0.00	−5.54	36.36
Customer satisfaction	Family	4.07	0.74	4	3	5
	Non-family	4.39	0.64	4	3	5
Customer retention rate	Family	3.92	0.82	4	1	5
	Non-family	4.35	0.70	4	2	5

Source(s): Author's research

Table 2. Descriptive statistics for family and non-family firms

and net profit were taken directly from the companies' income statements, while ROA was calculated as the ratio of the company's operating profit to the average value of the company's total assets. Similarly, ROE was calculated as the ratio of the company's net profit to the average value of equity. Debt to equity (D/E) ratio was calculated by dividing a company's long-term liabilities by its equity. Customer-related performance indicators were

obtained via a questionnaire. Respondents were asked to compare the satisfaction of their customers and customer retention rate with their most important competitors. They used a five-point Likert scale (1-significantly lower; 2- lower; 3-no difference; 4-higher; 5-significantly higher).

The results indicate that non-family firms have better overall performance than family firms. When comparing ROA and ROE, it can be noticed that ROA has a much smaller variance for both family and non-family firms. Moreover, the difference between the maximum and minimum value is also significantly lower for ROA, indicating that ROA, in this study, is a more reliable measure of financial performance than ROE. The reason for that is the fact that many small and young firms in Serbia have extremely low equity values in their balance sheets.

More than two-thirds of the companies do not have any long-term debt, so their D/E ratios are equal to zero. Some companies have very low equity values (close to zero). Consequently, their D/E ratios are extremely high, even with moderate amounts of long-term debt. On the other hand, a small number of companies reported a loss above the value of their equity, so their D/E ratios are negative. For all those reasons, the variance of the D/E ratio is extremely high, especially for family firms.

The independent samples *t*-test was used to check whether the differences in performance indicators are significant (Table 3). Since there are two versions of the *t*-test depending on whether the variances of the two groups (family and non-family firms) are assumed to be equal, Levene's test for equality of variances was performed. The results of Levene's test are not statistically significant, indicating that the *t*-test with equal variances assumed needs to be used.

The results of the *t*-test indicate that only the differences in ROA ($p = 0.02$), customer satisfaction ($p = 0.00$), and customer retention rate ($p = 0.00$) are statistically significant. This means that family firms, on average, have lower ROA, customer satisfaction, and customer retention rate than non-family firms. On the other hand, the differences in sales revenue, operating profit, net profit, ROE, and D/E ratio between family and non-family firms are not statistically significant, indicating that the samples of the two types of firms are very similar.

5. Results and discussion

The respondents evaluated four statements about innovations in producing and distributing goods or services and six statements about product and business process development

Financial and customer-related performance indicators		Levene's test for equality of variances		*t*-test for equality of means	
		F	Sig	*t*	Sig. (2-Tailed)
Sales revenue (in thousands RSD)	Equal variances assumed	0.28	0.60	−0.32	0.75
Operating profit (in thousands RSD)	Equal variances assumed	2.75	0.10	−1.57	0.12
Net profit (in thousands RSD)	Equal variances assumed	2.72	0.10	−1.31	0.19
ROA	Equal variances assumed	1.44	0.23	−2.33	*0.02*
ROE	Equal variances assumed	2.54	0.11	−0.15	0.88
D/E Ratio	Equal variances assumed	3.41	0.07	1.01	0.31
Customer satisfaction	Equal variances assumed	0.00	0.99	−2.98	*0.00*
Customer retention rate	Equal variances assumed	0.50	0.48	−3.71	*0.00*

Note(s): The results are significant at the 0.05 level
Source(s): Author's research

Table 3.
Independent Samples *t*-test

innovations. Table 4 shows the descriptive statistics of the measured parameters for innovations in producing and distributing goods or services.

Since the respondents evaluated their innovation activities on a five-point Likert scale and the mean values of their answers are greater than three for all four statements, it can be concluded that most of the surveyed family firms introduced innovations related to the production and distribution of goods or services. Specifically, 62% of the respondents among family firms' representatives stated that the latest technology is of great importance for producing their products or services, 44% that their company introduced innovations that enabled them to produce products or services in a shorter time than their competitors, 52% that most of their family members are dedicated to introducing innovations that continuously reduce operating costs and 64% that most of their family members are dedicated to introducing innovations that constantly reduce the time from ordering to delivery of a product or service.

Cronbach's alpha was used to determine the reliability of the measuring instruments. As a general rule, the values of this coefficient above 0.7 are considered acceptable. However, the values below 0.7 can be expected in researches that measure a large number of different influences, and this is especially true for the researches in the field of psychology (Field, 2009). The values of the coefficient also depend on the number of variables that make a construct. Its value increases with the number of variables, so it is possible to obtain high values not because the measuring instruments are reliable, but because there is a large number of variables that make a construct. For the sample of family firms, Cronbach's alpha coefficient is 0.636. Bearing in mind that there is a small number of items in a construct (only four statements), it can be concluded that the measuring instruments have good reliability.

Table 5 presents the descriptive statistics of the measured parameters for product and business process development innovations. The mean values of the responses are greater than three for all six statements, indicating that most of the family firms in the sample introduced innovations related to product and business process development.

More specifically, 56% of the respondents among family firms' representatives stated that their company introduced innovations that enabled them to operate more efficiently, 52% that customer suggestions led to numerous process improvements, 53% that most of their family members are dedicated to introducing innovations that continuously improve their processes, 62% that their company established routines that led to more efficient operations, 71% that their company introduced innovations that enabled them to respond to customer complaints in a shorter time than their competitors and 42% that their company introduced

Production and distribution of goods or services		*N*	Mean	Std. Dev	Min	Max
1. The latest technology is of great importance for producing our products or services	Family	85	3.86	0.98	1	5
	Non-family	85	3.91	1.08	1	5
2. Our company introduced innovations that enabled us to produce products or services in a shorter time than our competitors	Family	82	3.37	1.09	1	5
	Non-family	85	3.68	0.99	1	5
3. Most of our employees (family members) are dedicated to introducing innovations that continuously reduce operating costs	Family	85	3.52	0.92	1	5
	Non-family	84	3.42	0.89	1	5
4. Most of our employees (family members) are dedicated to introducing innovations that constantly reduce the time from ordering to delivery of a product or service	Family	84	3.71	0.94	1	5
	Non-family	84	3.90	0.83	2	5

Source(s): Author's research

Table 4. Descriptive statistics of the measured parameters

Product and business process development		*N*	Mean	Std. Dev	Min	Max
1. Our company introduced innovations that enabled us to operate more efficiently	Family	85	3.65	1.03	1	5
	Non-family	85	3.71	0.96	1	5
2. Customer suggestions led to numerous process improvements	Family	85	3.45	1.03	1	5
	Non-family	85	3.52	0.95	1	5
3. Most of our employees (family members) are dedicated to introducing innovations that continuously improve our processes	Family	83	3.54	0.99	1	5
	Non-family	83	3.81	0.88	1	5
4. Our company established routines that led to more efficient operations	Family	85	3.81	0.94	1	5
	Non-family	85	3.99	0.70	2	5
5. Our company introduced innovations that enabled us to respond to customer complaints in a shorter time than our competitors	Family	81	3.89	0.99	1	5
	Non-family	85	4.00	0.79	3	5
6. Our company introduced innovations that enabled us to develop a product or service in a shorter time than our competitors	Family	79	3.44	1.07	1	5
	Non-family	83	3.65	0.99	1	5

Source(s): Author's research

Table 5. Descriptive statistics of the measured parameters

innovations that enabled them to develop a product or service in a shorter time than their competitors. For the sample of family firms, Cronbach's alpha coefficient is 0.837, indicating good reliability of the measuring instruments.

The study results indicate that the surveyed family firms introduced numerous business process innovations related to the production and distribution of goods or services and product and business process development. Interestingly, more than two-thirds of the family firms introduced innovations that enabled them to respond to customer complaints in a shorter time than their competitors. On the contrary, less than one-half of the family firms introduced innovations that enabled them to develop or produce products or services in a shorter time than their competitors.

To investigate whether there are any differences in innovation performance between family and non-family firms that are similar in terms of size, industry, and geographic area, the independent samples *t*-test was conducted (Tables 6 and 7).

The results of Levene's test for equality of variances for innovations in producing and distributing goods or services are not statistically significant, implying that the *t*-test with

Production and distribution of goods or services		Levene's test for equality of variances		*t*-test for equality of means	
		F	Sig	*t*	Sig. (2-Tailed)
Statement 1	Equal variances assumed	0.00	0.95	−0.30	0.77
Statement 2	Equal variances assumed	0.68	0.41	−1.96	*0.05*
Statement 3	Equal variances assumed	0.18	0.67	0.72	0.47
Statement 4	Equal variances assumed	1.84	0.18	−1.39	0.17

Note(s): The results are significant at the 0.05 level
Source(s): Author's research

Table 6. Independent Samples *t*-test

Product and business process development		Levene's test for equality of variances		*t*-test for equality of means	
		F	Sig	*t*	Sig. (2-Tailed)
Statement 1	Equal variances assumed	1.04	0.31	−0.38	0.70
Statement 2	Equal variances assumed	0.76	0.38	−0.47	0.64
Statement 3	Equal variances not assumed	4.15	*0.04*	−1.83	0.07
Statement 4	Equal variances not assumed	14.84	*0.00*	−1.38	0.17
Statement 5	Equal variances assumed	1.09	0.30	−0.80	0.42
Statement 6	Equal variances assumed	0.78	0.38	−1.28	0.20

Note(s): The results are significant at the 0.05 level
Source(s): Author's research

Table 7.
Independent Samples *t*-test

equal variances assumed needs to be used. The results of the *t*-test are statistically significant only for Statement 2 ($p = 0.05$), indicating that family firms, on average, introduced fewer innovations than non-family firms that helped them produce products or services in a shorter time than their competitors. Family members are, on average, equally dedicated as employees in non-family firms to introducing innovations that continuously reduce operating costs and the time from ordering to delivery of a product or service. In addition, the latest technology is, on average, of equal importance for producing products or services for both family and non-family firms.

For product and business process development innovations, the results of Levene's test show that the independent samples *t*-test with equal variances not assumed needs to be used for Statements 3 and 4. For all other statements, a *t*-test with equal variances assumed was used.

The results of the *t*-test are not statistically significant for any statement, which implies that, on average, there are no significant differences in innovation performance related to product and business process development between family and non-family firms. Family and non-family firms both introduced innovations that enabled them to operate more efficiently, develop a product or service, or respond to customer complaints in a shorter time than their competitors. They both established routines that led to more efficient operations, and their customers' suggestions led to numerous process improvements. Finally, family members are, on average, equally dedicated as employees in non-family firms to introducing innovations that continuously improve processes in their companies.

The one-way ANOVA test was used to determine whether there are any significant differences in innovation performance among manufacturing, trade, and service family firms. Table 8 presents the results of the one-way ANOVA test for innovations in producing and distributing goods or services.

Since the homogeneity of variance is a necessary assumption for this test, Levene's test for equality of variances was conducted (Table 9). Levene's test is statistically significant for Statements 1–3, implying that the assumptions for the one-way ANOVA test are met because variances between the three groups (manufacturing, trade, and service) do not significantly differ. The results of the one-way ANOVA test are not statistically significant for Statements 1–3, which implies that, on average, there are no significant differences in innovation performance among manufacturing, trade, and service family firms.

For Statement 4, Levene's test is statistically significant ($p = 0.05$), implying that the homogeneity of variance assumption is violated. For that reason, instead of one-way ANOVA, two robust tests of equality of means were used. The results of both the Welch test ($F = 0.62$, $p = 0.54$) and the Brown-Forsythe test ($F = 0.68$, $p = 0.51$) are not statistically significant, implying that family members of manufacturing, trade, and service family firms

Production and distribution of goods or services		*N*	Mean	Std. Dev	One-way ANOVA *F*	Sig
Statement 1	Manufacturing	24	3.79	0.88	0.33	0.72
	Trade	23	4.00	0.90		
	Services	38	3.82	1.09		
Statement 2	Manufacturing	23	3.74	1.10	1.90	0.16
	Trade	23	3.22	1.17		
	Services	36	3.22	1.02		
Statement 3	Manufacturing	24	3.38	1.01	1.82	0.17
	Trade	23	3.83	0.83		
	Services	38	3.42	0.89		
Statement 4	Manufacturing	24	3.54	1.18	0.72	0.49
	Trade	23	3.87	0.81		
	Services	37	3.73	0.84		

Note(s): The results are significant at the 0.05 level
Source(s): Author's research

Table 8. Descriptive statistics of the measured parameters and one-way ANOVA

Production and distribution of goods or services	*F*	Sig	Product and business process development	*F*	Sig
Statement 1	1.30	0.28	Statement 1	2.52	0.09
Statement 2	0.48	0.62	Statement 2	1.03	0.36
Statement 3	1.08	0.34	Statement 3	0.38	0.69
Statement 4	3.14	*0.05*	Statement 4	0.45	0.64
			Statement 5	0.62	0.54
			Statement 6	0.03	0.97

Note(s): The results are significant at the 0.05 level
Source(s): Author's research

Table 9. Levene's test for homogeneity of variances

are, on average, equally dedicated to introducing innovations that constantly reduce the time from ordering to delivery of a product or service. The overall conclusion is that, on average, there are no significant differences in innovation performance related to the production and distribution of goods or services among manufacturing, trade, and service family firms.

Table 10 presents the results of the one-way ANOVA test for product and business process development innovations. Levene's test for equality of variances is statistically significant for all six statements, meaning that the assumptions for the one-way ANOVA test are met.

The results of the one-way ANOVA test are not statistically significant for any statement, which implies that, on average, there are no significant differences in innovation performance related to product and business process development among manufacturing, trade, and service family firms. Since the same result was obtained for innovation performance related to the production and distribution of goods or services, it can be concluded that, on average, there are no significant differences in business process innovation performance among manufacturing, trade, and service family firms in Serbia.

A correlation analysis was conducted to investigate the nature of the relationship between business process innovation and customer satisfaction among family firms. Table 11 presents Pearson correlation coefficients between the perceived customer satisfaction and the ten statements about business process innovations.

All correlation coefficients are positive, and they are statistically significant for all statements except for Statement 1 (Production and distribution of goods or services) and

Product and business process development		N	Mean	Std. Dev	One-way ANOVA F	Sig
Statement 1	Manufacturing	24	3.50	1.22	0.34	0.72
	Trade	23	3.70	0.82		
	Services	38	3.71	1.04		
Statement 2	Manufacturing	24	3.71	1.12	2.85	0.06
	Trade	23	3.65	0.83		
	Services	38	3.16	1.03		
Statement 3	Manufacturing	24	3.58	0.88	0.33	0.72
	Trade	23	3.65	1.07		
	Services	36	3.44	1.03		
Statement 4	Manufacturing	24	3.88	1.03	2.61	0.08
	Trade	23	4.13	0.87		
	Services	38	3.58	0.89		
Statement 5	Manufacturing	22	4.05	1.05	0.40	0.67
	Trade	23	3.87	1.10		
	Services	36	3.81	0.89		
Statement 6	Manufacturing	22	3.68	1.09	1.11	0.34
	Trade	22	3.50	1.01		
	Services	35	3.26	1.09		

Note(s): The results are significant at the 0.05 level
Source(s): Author's research

Table 10. Descriptive statistics of the measured parameters and one-way ANOVA

Production and distribution of goods or services	r	Sig	Product and business process development	r	Sig
Statement 1	0.13	0.12	Statement 1	*0.32*	*0.00*
Statement 2	*0.18*	*0.05*	Statement 2	0.08	0.22
Statement 3	*0.38*	*0.00*	Statement 3	*0.34*	*0.00*
Statement 4	*0.24*	*0.02*	Statement 4	*0.34*	*0.00*
			Statement 5	*0.37*	*0.00*
			Statement 6	*0.32*	*0.00*

Note(s): The results are significant at the 0.05 level
Source(s): Author's research

Table 11. Pearson correlation coefficients between customer satisfaction and business process innovation indicators

Statement 2 (Product and business process development). There is a high correlation ($r > 0.3$) between customer satisfaction and introducing innovations that continuously reduce operating costs, improve processes, enable more efficient operations, reduce the time to respond to customer complaints, and reduce the time to develop a product or service. Table 12 presents Pearson correlation coefficients between perceived customer retention rate and the ten statements about business process innovations.

As in the previous case, all correlation coefficients are positive, and they are statistically significant for all statements except for Statement 1 (Production and distribution of goods or services). There is a high correlation ($r > 0.3$) between customer retention rate and introducing innovations that continuously reduce operating costs, improve processes, and reduce the time to respond to customer complaints.

The study results indicate that establishing routines that lead to more efficient operations and introducing innovations that continuously reduce operating costs, improve processes, and reduce the time to respond to customer complaints are positively associated with customer satisfaction and customer retention rate.

6. Conclusions and future developments

This paper adds important new insights to the innovative activity of family businesses in Serbia and establishes whether there are any differences in the innovation performance of these firms compared to non-family firms. Specifically, the authors analyze how innovative Serbian family businesses are and whether they are successful in that process compared to non-family firms. The results of the study indicate that family businesses in Serbia are innovation-oriented and that they introduced a number of innovations in business processes related to the production and distribution of goods or services and the development of products and business processes. The results also suggest that family and non-family firms are equally committed to introducing innovations in business processes. The authors emphasize the fact that the only difference is that family firms on average introduced less innovations compared to non-family firms that helped them produce products or services in less time than the competition. In addition, the empirical research in the paper did not confirm any significant differences in the performance of business process innovation among family firms in the manufacturing, trade, and service sectors. Finally, the results demonstrate that introducing business process innovations is positively associated with customer satisfaction and customer retention rate in Serbian family firms.

Despite certain limitations (a relatively small sample, lack of objectivity, different perception of the respondents, data reliability, etc.), the conducted research has improved the understanding of the innovative ability of family businesses in Serbia. The main contribution of this study is that it explores the innovation performance of Serbian family firms and the differences in the innovation performance of these firms compared to non-family firms. To the authors' best knowledge, such research has not been previously conducted in Serbia.

The findings of this paper could help policymakers decide in which direction it is necessary to provide support to strengthen the innovation capacity of small businesses. The results obtained in this research can also be used by small companies to improve their innovation potential. Moreover, the results could be useful for policymakers to create the instruments for supporting family businesses in Serbia. Finally, the results could be applied to all countries which have similar characteristics of national innovation system, such as the Western Balkans countries.

For future research, it would be of special importance to introduce the analysis of various factors that can determine the innovative ability of a company and whose effects have not been considered in the study. It primarily refers to monitoring the innovative abilities of family businesses, but through different phases of a life cycle. The assumption is that their innovative ability changes at different stages of their development in line with the changes in basic management attributes. However, the impact of long-term enterprise strategy, life cycle and management structure on innovation has not been sufficiently investigated (Craig and Moores, 2006). Furthermore, the current global development caused by the outbreak of the

Table 12.
Pearson correlation coefficients between customer retention rate and business process innovation indicators

Production and distribution of goods or services	*r*	Sig	Product and business process development	*r*	Sig
Statement 1	0.06	0.29	Statement 1	*0.23*	*0.02*
Statement 2	*0.21*	*0.03*	Statement 2	*0.27*	*0.01*
Statement 3	*0.36*	*0.00*	Statement 3	*0.38*	*0.00*
Statement 4	*0.20*	*0.03*	Statement 4	*0.43*	*0.00*
			Statement 5	*0.43*	*0.00*
			Statement 6	*0.27*	*0.01*

Note(s): The results are significant at the 0.05 level
Source(s): Author's research

coronavirus pandemic has just confirmed the importance of innovation. In new and significantly more difficult circumstances, when businesses are largely focused on the virtual environment and when it is assumed that the trend will continue in the post-COVID period, future research may focus on understanding the role of innovation in overcoming the negative effects of crisis and business consolidation.

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