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How innovativeness of family-owned SMEs differ depending on their characteristics?

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Abstract

Research background: SMEs encounter more survival impediments than larger businesses. Innovativeness is a crucial attribute for smaller firms to overcome these barriers since it positively influences their performance, competitiveness, and capability to operate in the long term. However, depending on firm characteristics, the innovativeness of SMEs might differ.

Purpose of the article: This research investigates whether the innovativeness of family-owned SMEs differs depending on their size, sector, area of activity, and succession on the sample of 350 family-owned SMEs that operate in Czechia.

Methods: The data collected in the Czech Republic in 2020 through the structured self-administered questionnaire were analyzed using Skewness-Kurtosis and Levene's normality tests and Independent Sample T-test to find the differences in SMEs innovativeness depending on their selected characteristics.

Findings & value added: According to the results, SMEs' innovativeness differs depending on their size, industry, and area activity. On the other hand, the analyses confirmed the nonexistence of the differences in SMEs' innovative-ness concerning succession involvement. The region of SMEs' operation, the scope of their activities, and firms' executives' age might be crucial arguments to explain the differences and similarities in these enterprises' innovativeness. Even though the research focuses only on the SMEs located in Czechia, the similarity of the issues all SMEs face when competing with the larger firms worldwide, especially if we take into consideration the countries with a similar level of development and overall institutional business conditions, allows for generalizing our results and might draw readers' attention to this paper. Policymakers, universities, international institutions, and financial institutions might cooperate to create industrial zones, encourage research centers, and provide education and financial support to stimulate SMEs' innovative activities.

Introduction

The majority of family businesses belong to the segment of small and medium-sized enterprises (SMEs) (Grundström *et al.*, 2012; Marjański & Sułkowski, 2021), which means they employ a maximum of 249 workers as is defined by the European Commission's classification (2003). These businesses are also more flexible and quick to adapt to changing market conditions than their larger counterparts. Moreover, SMEs make significant contributions to governments' tax income, workforce (Dvorský *et al.*, 2020), and countries' GDP (Belas *et al.*, 2020; Agbim, 2020; Civelek *et al.*, 2020). But since they face with more financial problems when competing with their larger sized rivals (Kramoliš & Dobeš, 2020), they might be more fragile when operating in complex environments (Virglerova *et al.*, 2020).

Nevertheless, to weaken their larger competitors' competitive power, SMEs can use some of their entrepreneurial attitudes and competencies, while innovativeness is a possible option (Asim *et al.*, 2019; Dankiewicz *et al.*, 2020). By having an innovative attitude, businesses can create novel ideas, goods, services, processes, technologies (Aslesen & Harirchi, 2015; Bigos & Michalik, 2020). However, a firm's innovativeness might differ depending on SMEs' characteristics (Coen Rigtering *et al.*, 2014; Filser *et al.*, 2018).

In this regard, this paper aims to examine the differences in SMEs' innovativeness depending on their size, the industry they operate, their area

of activity, and successor involvement in their innovative activities. For these reasons, the research question might arise as follows: Does the innovativeness of SMEs differ between larger-smaller, manufacturing-service, regional(local)-national, international, and successor involved or non-involved SMEs? In line with the selected purposes, this paper analyses 350 family-owned SMEs operating in Czechia. Firms with family successors and owned only by the family members consist of homogenous groups (Grundström *et al.*, 2012). The researchers employed a structured self-administered internet-mediated questionnaire survey and an Independent Sample T-test for data collection and analysis.

This paper is a continuation of the research by Ključnikov *et al.* (2021). Although the previously published paper is focused on firm innovativeness depending on organizational, local and global perspectives, and firm-individual levels characteristics such as the age of their founders/entrepreneurs and legal form of business, the current study investigates firm innovativeness as a unique structure. It focuses on such firm-level characteristics as the area of activity, sector of doing business, and firm size. In this regard, the readers might get a more complex overview of the innovativeness of family-owned SMEs from different perspectives.

The rest of the paper is structured as follows: Section two will outline this research's theoretical background and develop the research hypotheses. Section 3 elucidates the aim, the data, performed statistics, and the paper's research methods. The results from the analyses are clearly illustrated and explained in Section 4. Section 5 will discuss this study's results and provide the prospective arguments for these results, including some policy implementations. Finally, the conclusion part of the research paper will explicitly summarize the paper's main points and present the limitations of this research.

Literature review and hypothesis development

Firm characteristics are the determinant factors in the innovativeness of SMEs. Several studies confirmed the fact that firms might have different innovative posture depending on their size (Kowalik *et al.*, 2017), sector (Civelek & Ključnikov, 2018), area of activity (Aslesen & Harirchi, 2015), and succession involvement (Filser *et al.*, 2018) since those characteristics make them have some advantages or disadvantages regarding capital requirements, amount of financial assets, applied strategies, firm structure. However, unlike those previous studies, this paper pays regard to all those characteristics of family-owned SMEs in a European country; thus, it

would be noteworthy to investigate such a topic to fulfill the research gap. Furthermore, considering all the mentioned variables, a comprehensive research approach is this paper's contribution to the related scientific literature, making this paper original.

Concerning SMEs' size, several studies confirm the differences in the innovativeness between smaller and larger SMEs (Pett & Wolf, 2012; Kowalik *et al.*, 2017). For instance, since larger firms have more financial and physical assets (Ključnikov *et al.*, 2020), their executives have more willingness to access various markets. Thus, larger firms are more likely to apply innovative activities than their smaller counterparts (Pett & Wolf, 2012; Kowalik *et al.*, 2017). On the other hand, several authors present the studies opposing the results of the researches mentioned above. For instance, Laforet (2013) substantiates that because of their flexible structure, project-driven tendency, and cost-effective nature, small firms are more innovative than larger businesses. Therefore, by considering above mentioned empirical results that prove the existence of the differences between smaller and larger firms' innovativeness, this paper sets the first hypothesis as follows:

H1: A statistically significant difference exists between the mean volumes of larger and smaller firms' innovativeness.

Coen Rigtering *et al.* (2014) confirm the differences in service and manufacturing firms' innovativeness by mentioning that innovations in services are less structured and are not very technical. Thus, performing innovative actions for firms in the service industry is more effortless than manufacturing firms that need more resource commitments to make innovative actions. In this regard, service firms' more straightforward innovations affect their innovation culture and positively affect these businesses' performance (Tang, 2020). Significant role in this process is also attributed to the role of motivation and ability to retain skilled employees (Bilan *et al.*, 2020; Smolarek & Sułkowski, 2020). However, some studies remark dissent views. For instance, according to Civelek and Ključnikov (2018) and Civelek and Dursun (2018), businesses in the service industry more substantially lack tangible, intangible, and perishable assets for bank loan collateral than businesses in the manufacturing industry. Manufacturing firms also have easier access to other external funds, for instance, EU funds of financial support (Piątkowski, 2020). For these reasons, when applying innovative activities, service firms can lack the capital to make investments compared to manufacturing SMEs, which may affect their innovativeness.

Due to those various arguments, the study assumes the following second hypothesis:

H2: *A statistically significant difference exists between the mean volumes of manufacturing and service firms' innovativeness.*

The internationalization process makes businesses behave more innovatively (Aslesen & Harirchi, 2015; Kowalik *et al.*, 2017), since it enables businesses to create new ideas, apply know-how activities, and do research for various markets (Zijdemans & Tanev, 2014). International firms also collaborate with foreign global companies, and such a collaboration stimulates innovative activities of international businesses (Aslesen & Harirchi, 2015). For these reasons, firms that operate in international markets are more innovative when comparing local businesses (Zijdemans & Tanev, 2014). Consumers' demands and tastes differ in various regions of a country because each region has its characteristics and socio-economic factors that affect businesses' innovative actions (Aslesen & Harirchi, 2015). Hence, compared to a firm that only operates in a specific region at the subnational level, businesses that operate country-wide might be more likely innovative than regional businesses. In line with those arguments, we formulate the third hypotheses of this paper as follows:

H3: *A statistically significant difference exists between the mean volumes of local(regional) firms and national-international firms' innovativeness.*

Regarding successors' involvement in firms' innovative activities, Webb *et al.* (2010) compare the involvement of successor and external parties in family businesses and confirm the differences between these firms' innovativeness. The successors' involvement in businesses might reduce firms' ability to innovate and to make innovative investments (Filser *et al.*, 2018). Family members are related to each other with fellow emotional feelings and are more prone to follow common ideas instead of taking innovative, risky actions (Kotlar *et al.*, 2014) that might improve firms' ability to find innovative opportunities (Filser *et al.*, 2018). Thus, they are less likely to create new innovative notions (Grundström *et al.*, 2012). At the base of the studies mentioned above, the researchers set the following hypothesis regarding successor involvement and innovativeness of SMEs:

H4: *A statistically significant difference exists between the mean volumes of firms' innovativeness depending on successor involvement in innovative activities.*

Some studies have also used an independent sample T-test when analyzing the differences in the innovativeness of firms depending on their firm-individual level characteristics (Nowacki & Staniewski, 2012; Kozubíková *et al.*, 2018; Lee & Lee, 2007). Thus, this paper employs Independent Sample T-test to indicate whether the innovativeness of SMEs differs depending on their size, sector, area of activity, and succession.

Research methodology

This paper aims to examine the differences in SMEs' innovativeness depending on their firm-specific characteristics, precisely the size of the firm, the industry they operate, their area of activity, and successor involvement in their innovative activities

The researchers employed a structured self-administered internet-mediated questionnaire survey to collect the data from the selected respondents. In addition, the researchers have applied an intentional sampling method to select the respondents. Although the researchers directed those questionnaires to 742 family-owned SMEs, the response rate was 47.17%. Thus, the sample included 350 family businesses that operate in Czechia. The research team completed the data collection process in 2020. The intentional sampling method that the researchers performed focused on family businesses. Therefore, the sample includes firms with a minimum of two individuals from the same family that play essential roles in firm management, including the manager, shareholder, owner, and entrepreneur.

The researchers have chosen the following questions (statements) from the survey to evaluate the innovativeness of SMEs; "Newness of change (innovation) for the organization," "Newness of change (innovation) for the local market," and "Newness of change (innovation) for the global market." The responses were scaled by the scholars as follows: "1 — Newness of change (innovation) is not new for the organization, 2 — Newness of change (innovation) is partially new for the organization, 3 — Newness of change (innovation) is entirely new for the organization, 4 — Newness of change (innovation) is revolutionary for the organization." Therefore, higher values show more innovativeness, vice versa.

Although the standard European Union classification divides SMEs into three categories regarding their size (micro, small and medium-sized enterprises), the researchers classified the researched sample of firms into two different size categories of smaller and larger firms. The research team included micro-enterprises into the smaller firms category and small and medium-sized enterprises into the *larger* firms category for analysis pur-

poses. Regarding the area of activity, a systematic approach is the classification of firms into three categories — local (firms operating only in regional, local markets), national (firms operating in the whole territory of Czechia), and international (firms operating globally including EU and non-EU countries). The research team used a simplified version for the analysis purposes in the presented research with only two combined firms categories — locally and nationally/internationally operating firms. Moreover, successors' involvement in firms' innovative activities is evaluated by dichotomous questions (yes, no).

The previous literature review section presented the hypotheses that are analyzed in this research paper. 5% significance level is taken into consideration to decide whether the hypotheses are supported or not. The null hypotheses are created as follows: There are no statistically significant differences between the mean volumes of the variables (larger-smaller SMEs, manufacturing-service firms, local-national/international businesses, involved-noninvolved successors in innovative activities). P-values higher than the selected significance level (5%) prove that the research results fail to support alternative hypotheses and support null hypotheses.

The researchers performed a normality test to indicate and confirm the normal data distribution. In this regard, the researchers consider the values from Skewness-Kurtosis and Levene's tests, and the results of those tests are presented in Annex, Table 1. According to George and Mallery (2010), Skewness and Kurtosis value might differ between -2 to +2 to fulfill the normality test's assumptions. Regarding Levene's test, the results are higher than the 5% level of significance. Thus, the variances between the groups are not statistically significant and research sample meets with normality test assumptions. In this regard, this paper employs Independent Sample T-test to find the differences in the means of innovativeness of SMEs depending on their selected characteristics. The researchers used SPSS Statistical Program Version 23 to perform the analyzes of this research. Regarding sample profile, Table 2 in the Annex of this paper illustrates the sample profile.

Results

Table 3 indicates the Independent Sample T-test results regarding size, sector of SMEs, and their innovativeness. According to Table 2, p-values for both firm size and sector are lower than the level of significance (firm size: $t(348) = -5,302$, $p = 0.000 < 0.05$; firm sector: $t(348) = 6,192$ $p = 0.000 < 0.05$). Therefore, this research proves that the mean volumes for

SMEs' innovativeness differ depending on firm size and sector. This fact supports the hypotheses H1 and H2 that presume the existence of differences between the mean volumes of smaller-larger and manufacturing-service firms.

As Table 3 presents, when it comes to the details about these variables, the mean volume for larger enterprises (mean = 1,7341) is higher than their smaller-sized counterparts (mean = 1,4922). Similarly, the mean volume for manufacturing firms is higher (mean = 1,7316) than enterprises that operate in the service sector (mean = 1,4688). These volumes also confirm the fact that larger enterprises, compared to smaller businesses, are more innovative. On the other hand, manufacturing firms have more innovativeness in comparison with service firms.

Table 4 demonstrates the Independent Sample T-test results for the activity area, successors' involvement in firms' innovative activities, and SMEs' innovativeness. As it is shown in Table 3, p-value for area of activity is significant at 5% significance level (area of activity: $t(348) = -7,134$, $p = 0.00 < 0.05$). For this reason, the mean volumes for the innovativeness of SMEs significantly differ depending on these firms' area of activity and local(regional) and national/international firms' innovativeness. In this regard, the research results support hypothesis H3 that assumes the existence of a significant difference between the mean volumes of local and national-international firms' innovativeness. Comparing the mean volumes of both groups, the mean volume for national/international firms' innovativeness (mean = 1,8345) is higher than the mean volumes of local(regional) firms' innovativeness (mean = 1,4742). Hence, the research results indicate that the firms operating on the national and/or international level are more innovative than local(regional) enterprises.

Table 4 also presents the volumes from the Independent sample T-test concerning successor involvement in businesses' innovative activities. According to Table 3, p-value is not significant at 5% level of significance level, since p-value is higher than the chosen significance level (successor involvement: $t(348) = -1,726$, $p = 0.085 > 0.05$). For this reason, the study fails to support hypothesis H4 that assumes the existence of significant differences between the mean volumes for the innovativeness of SMEs depending on their successors' innovative activities. This fact confirms that SMEs' innovativeness does not differ whether their successors are involved in innovative actions.

Discussion

Our results show that smaller SMEs are less innovative than their larger counterparts, which conforms with the results of Pett and Wolf (2012) and Kowalik *et al.* (2017). The location where larger SMEs operate might be a determinant factor to explain why they are more innovative than their smaller counterparts. Audretsch *et al.* (2015) also found that businesses' innovativeness might differ depending on the regions they operate. In this regard, since more developed regions have more competitive markets, businesses located in such regions might be more innovative than other firms located in less developed regions. When considering the research data, the number of SMEs located in most advanced regions of Czechia (Praha, Středočeský, and Moravskoslezský regions) is higher for larger enterprises comparing with their smaller-sized counterparts. Hence, this fact might be a piece of evidence to explain the differences between SMEs' innovativeness depending on their size.

Regarding the sector of SMEs and their innovativeness, manufacturing firms are more innovative than service firms. These findings are consistent with the results of the studies of Coen Rigtering *et al.* (2014) and Tang *et al.* (2020). Operating in international markets might be a reason to explain the differences between the innovativeness of manufacturing and service firms because, according to Kathuria *et al.* (2008), firms in the manufacturing industry operate in international markets, make more exports, and go more globally comparing with service firms. Compared to service firms, more manufacturing firms from our research sample operate in international markets. This fact might be the reason for the differences in sectors and the innovativeness of SMEs.

This study indicates the differences between national/international SMEs and local (regional) firms concerning activity and innovativeness. Thus, this paper finds similar results with Aslesen and Harirchi (2015) and Kowalik *et al.* (2017). The reason for this might be related to operating in wider geographical areas. Furthermore, by operating in various local and international markets, national/international businesses involved in this research might have increased their range of products or services by applying more innovative activities.

This paper does not substantiate the differences between SMEs' innovativeness concerning successor involvement in innovative activities. Hence, this result is opposite to the findings by Webb *et al.* (2010) and Grundstrom *et al.* (2012) since these studies corroborate the differences in the innovativeness of businesses depending on their successors' involvement. The age of the surveyed entrepreneurs may reason our opposite results because age

is a determinant factor for SMEs' innovativeness (Ključnikov *et al.*, 2019), and compared to older entrepreneurs, younger entrepreneurs are more innovative (Tominc, 2019). Considering the research data, 69% of entrepreneurs in SMEs with no involved successors are less than 50 years old. However, this percentage for SMEs with successor involvement in innovative activities is just 37%. Having younger entrepreneurs involved, SMEs without successors might have performed as innovative as their counterparts with successors. Thus, this fact can be a solid argument to explain the nonexistence of the differences in SMEs' innovativeness depending on the involvement of successors in innovative activities.

The results of this paper regarding the policy and practical implications suggest that policymakers can create industrial zones to support innovativeness. Those areas stimulate SMEs' innovativeness with various characteristics to minimize the gap between SMEs' innovativeness depending on their size, industry, and activity area. Moreover, foreign businesses might be interested in working in such an environment. These foreign enterprises might have the willingness to collaborate with local businesses to make more innovative activities. The firms that operate in such regions might receive some tax reductions, R&D subsidies, and supports for patent applications that indicate firms' innovative behaviors. Governments, universities, and patent offices are also vital factors for developing entrepreneurial attitudes, innovative ideas, and minds in such regions. Except for these players, other international institutions such as the European Union, European Investment Bank, and IMF can also provide financial supports to fund research centers and innovative investments of enterprises.

Conclusions

Most SMEs sustainably compete during their life cycle with larger enterprises, competitors with higher financial capabilities. Nevertheless, by involving essential entrepreneurial competencies such as innovativeness, these smaller businesses better succeed in this unfair competition. However, innovative actions and behaviors of SMEs can be different since they have various characteristics. In this context, the paper explores and analyzes whether the differences exist between SMEs' innovativeness depending on their size, sector, area of activity, and successors' involvement. This paper focuses on a specific segment of family-owned SMEs that operate in various sectors of the economy in different Czechia locations and investigates the innovativeness of those firms by considering some of their specific characteristics.

According to the results of this paper, smaller enterprises are less innovative than larger SMEs. This result might be related to the region where these businesses operate. Regarding the sector and area of activity, service firms and businesses that operate to the regional(local) extent are less innovative than manufacturing SMEs and nationally/internationally operating businesses. The scope of operations might be a strong argument to explain the differences in innovativeness depending on firms' sector and activity area. However, this paper does not find any differences between SMEs concerning successors' involvement in their innovative actions. The age of entrepreneurs can be the determinant factor to support this result.

Analyzing businesses' innovativeness from widening perspectives (various characteristics) not covered by the researchers in previously published studies makes this paper original and bringing new comprehensive knowledge to the entrepreneurship literature. Academicians, international readers, policymakers, enterprises, executives, development agencies, and other governmental and non-governmental institutions may benefit from this study, since it presents strong arguments regarding differences and similarities in the innovativeness of family-owned SMEs operating in various sectors, areas, SMEs with or without successors.

However, this paper also has some limitations, mostly related to the presented research's sample size and potentially regional focus. Further studies can also include other entrepreneurial behaviors of SMEs to have a more complex view of entrepreneurship's problematics. Moreover, entrepreneurs' characteristics might be included in further research studies focused on the differences in businesses' innovativeness except for firm characteristics. Finally, the researchers can also analyze SMEs that are not family-owned businesses and compare family or non-family-owned enterprises' innovativeness.

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Annex

Table 1. Test of normality

Skewness & Kurtosis		Levene's Test			
Skewness	Kurtosis	Firm Size	Sector	Area of activity	Successor involvement
0.479	1.798	0.192	0.164	0.137	0.634

Table 2. Sample profile

		Czech	
		<i>n</i>	Share
Firm size	Microenterprises	172	49.14%
	Small	140	40.00%
	Medium	38	10.86%
	Total	350	100%
Sector	Manufacturing	195	55.71%
	Service	155	44.29%
	Total	350	100%
Area of activity	Regional(local)	213	60.86%
	National	76	21.71%
	International	61	17.43%
	Total	350	100%
Successors in the innovative act.	Non-involved	197	56.29%
	Involved	153	43.71%
	Total	350	100%

Table 3. The results of the T-test regarding firm size-sector and innovativeness of SMEs

	Firm size		Sector	
	smaller	larger	manufact.	service
<i>n</i>	172	178	195	155
<i>df</i>		348		348
<i>t</i>		-5.302		6.192
Significance		.000		.000
mean	1.4922	1.7341	1.7316	1.4688

Table 4. The results of the T-test regarding firm size-sector and innovativeness of SMEs

	<i>Area of Activity</i>		<i>Successors in innovative act</i>	
	local	International	Non-involved	Involved
n	213	137	197	153
df		348		348
t		-7.134		-1.726
Significance		.000		.085
mean	1.4742	1.8345	1.5787	1.6623