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The impacts of innovative and competitive abilities of SMEs on their different financial risk concerns: System approach

JEL Classification: G33; L25; L26

Keywords: *financial risk management; financial performance; bankruptcy; innovativeness; competitiveness*

Abstract

Research background: The lack of financial resources of small and medium enterprises (SMEs) make them face high financial risk. Their entrepreneurial abilities that belong to Resource-based View (RBV), such as innovativeness and competitiveness, might reduce SMEs'

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financial risk because those entrepreneurial abilities increase the financial performance of businesses.

Purpose of the article: This paper aims to investigate the effects of the innovativeness and competitiveness of SMEs on their financial concerns based on financial risk, including bankruptcy, financial performance, and financial risk management.

Methods: The authors use a method of data analysis and synthesis, including advanced knowledge and digital processing of background studies. This paper examines 1221 SMEs from the Czech Republic, Slovakia, and Hungary. Those firms are chosen by random sampling method from Cribis and the Budapest Chamber of Commerce databases. Then the researchers directed an online questionnaire to collect the research data from the randomly selected firms. The researchers use Ordinal Logistic Regression Test for analysis purposes.

Findings & value added: This paper's results indicate that SMEs' competitiveness does not impact SMEs' bankruptcy prediction, financial performance, or financial risk management. On the other hand, while more innovative SMEs are less likely to face bankruptcy issues than less innovative SMEs, less innovative SMEs indicate better financial performance than their more innovative counterparts. Since this paper focuses on the influences of intangible assets of SMEs (such as characteristics based on RBV and Entrepreneurial Orientation) on their tangible assets (financial performance etc.) and puts emphasis on this fact from an International perspective, this paper makes a significant contribution to the literature. Furthermore, analyzing multiple relationships between SMEs' different entrepreneurial characteristics and various financial risk concerns is another important fact that might draw prospective readers' attention.

Introduction

SMEs are identified as firms with less than 250 workers, less than EUR 50 million in annual turnovers, and less than EUR 43 million in balance sheet total (European Commission, 2006). SMEs take a leading role in the creation of job opportunities (Civelek & Krajčák, 2022), the development of countries, innovation capacity (Catanzaro & Teyssier, 2021), and value-addition (Wai *et al.*, 2022) of goods and services (Ključnikov *et al.*, 2022). However, their vulnerable structure against bankruptcy, lack of knowledge regarding financial risk management (Markus & Rideg, 2020), and low financial performance (Belas *et al.*, 2020) that increase their financial risk are the major concerns of most SMEs to survive (Agyabeng-Mensah & Tang, 2021). In this regard, their innovative and competitive capabilities might provide them with solutions to their financial risk problems (Civelek *et al.*, 2022).

SMEs' innovation capabilities give them financial sustainability and resistance (El Chaarani *et al.*, 2022). The innovative abilities of businesses enable them to transform their new ideas into new processes, procedures, and experiments to create new products and services. Moreover, SMEs'

innovativeness and competitiveness allow them to have easier credit access (Lumpkin & Dess, 1996), reducing their financing problems. Furthermore, competitiveness helps firms to increase their productivity and fulfilling customers' demands by differing from their rivals (Markus & Rideg, 2020). Competitiveness is also a crucial ability for SMEs since it makes businesses lower their prices, improve and create new products and services, and increase the quality of their offerings (Le & Ikram, 2022), so their performance (Williams *et al.*, 2018; Stocker & Várkonyi, 2022). Therefore, this paper aims to investigate the effects of the innovativeness and competitiveness of SMEs on their bankruptcy, financial performance, and financial risk management concerns. In line with this purpose, the research question is, "How do innovative and competitive abilities of SMEs might influence their bankruptcy predictions, financial performance, and financial risk management issues that belong their financial risk? In line with the selected purpose, the researchers applied a random sampling method to create the research sample from various sources, namely, Cribis and the Budapest Chamber of Commerce databases. 1221 Czech, Slovakian, and Hungarian SMEs fulfilled an online questionnaire that the researchers shared. Then, the researchers applied Ordinal Logistic Regression Test to analyze the research data.

Furthermore, innovative and competitive competencies of businesses are based on a Resource-Based View (RBV) closely related to the dimensions of Entrepreneurial Orientation (EO) (Nasser, 2020). RBV has focused on firms' internal sources, such as their characteristics, posture, and potential (Irava & Moores, 2010). Innovativeness and competitiveness can also be called firms' dynamic capabilities because those abilities make firms apply their resource-based (RBV) characteristics to survive. RBV also posits that firms can use their abilities to increase their competitiveness against their rivals (Barney, 1991) by developing new products or services that competitors might not imitate (Pereira-Moliner *et al.*, 2021). These resource-based view factors enable businesses to survive (Shin *et al.*, 2017). Since innovative and competitive abilities are some of the firms' internal characteristics and are two components of EO (Lumpkin & Dess, 1996), the entrepreneurial attitudes this paper investigates are based on both RBV theory and EO dimensions.

As financial risk is one of the major concerns of SMEs worldwide, SMEs in Eastern European counties, such as the Czech Republic, Slovakia, and Hungary, are also deeply concerned about their financial risk (Hudakova *et*

al., 2021; Meluzin & Zinecker, 2014; Meluzín *et al.*, 2018; Skalická *et al.*, 2023; Zinecker *et al.*, 2022). SMEs' financial risk increases when their probability of bankruptcy and uncertainty in their financial management increase (Belas *et al.*, 2021). Moreover, when the financial performance of SMEs decreases (revenues, income, etc.), their financial risk increases (Kölbel *et al.*, 2017). Those facts are the reasoning for the investigation of bankruptcy, financial performance, and financial management issues of Czech, Slovakian, and Hungarian SMEs in this paper separately.

Although many studies investigate the relationship between innovativeness or competitiveness and performance (Varis & Littunen, 2010; Shashi *et al.*, 2019; Zulu-Chisanga *et al.*, 2016; Williams *et al.*, 2018; Markus & Rideg, 2020; Meluzín *et al.*, 2021; Karadağ, 2018), innovativeness or competitiveness and bankruptcy (Giovannetti *et al.*, 2009; Cucculelli & Peruzzi, 2020; Aziz *et al.*, 2021; Lee & Ikram, 2022), and innovativeness or competitiveness and financial risk management (Yankson *et al.*, 2022; Donkor *et al.*, 2018; Brustbauer, 2016; Crovini *et al.*, 2021) they only focus on the relationships between one of those entrepreneurial characteristics and a financial issue such as bankruptcy, financial performance, and financial risk management. Moreover, the research samples those studies analyze are also based on a country where businesses operate. For these reasons, this research differs from other studies by analyzing the relationships between various entrepreneurial characteristics and financial concerns of SMEs in some European countries, namely, the Czech Republic, Slovakia, and Hungary, and filling this research gap.

Another difference of this study from others (El Chaarani *et al.*, 2022; Kim & Kim, 2021) is considering executives' self-evaluation regarding their firms' financial performance, bankruptcy, and financial risk management. Those researchers analyze hard data such as financial statements and financial ratios when evaluating the financial performance of businesses. Moreover, the Czech Republic, Slovakia, and Hungary's business environments are closely related to their neighboring countries. In this regard, the findings of this research might be quite interesting for prospective users who might be government officials, workers of financial institutions, academicians, and company executives.

The rest of the paper is structured in the following sequence. First, in the Theoretical Background and Hypotheses Development section, the researchers create the research hypotheses by giving arguments from previously published empirical studies. Next, the methodology section ex-

plains all the methodological approaches, including data collection, sampling methods, sample profile, and data analysis. Next, the researchers present the results from their analyses and discuss the potential reasons for those findings with some policy implications in the Results and Discussion section. Finally, the researchers not only summarize the most crucial information regarding the paper but also declare the limitations of the paper in the Conclusion section.

Theoretical background and hypotheses development

Bankruptcy has always been a threatening survival issue for SMEs (Kaya, 2022). Bankruptcy is a legal process that pressures firms to fulfill their debt obligations (Gormley *et al.*, 2018). It determines whether firms will overcome this financial issue or discontinue their operations (Mayr *et al.*, 2017). In this regard, firms face bankruptcy issues when they default on their debt payment or do not fulfill their liabilities (Tobback *et al.*, 2017). Due to a lack of sales revenues and managerial and economic competencies, many businesses face bankruptcy (Bič, 2022). However, innovativeness might solve this issue since it is a strategy that makes SMEs overcome crises (El Charani *et al.*, 2022; Mayr *et al.*, 2017).

Firms operating in a dynamic market environment use their resources to introduce new products and implement new approaches in production to become more likely to survive. Without these innovative actions, they cannot fulfill the changing demands of their customers (Yankson *et al.*, 2022). Therefore, these actions enable innovative firms to be more competitive and survive long-term (Nogueira *et al.*, 2018). This fact is also confirmed by Giovannetti *et al.* (2009), who analyze 4,289 Italian companies. Furthermore, Kaya (2022) also explores SMEs from Germany, France, Italy, Spain, and the Netherlands and verifies that while bankruptcy risk has increased during the Covid-19 pandemic, innovative SMEs have been more resilient to bankruptcy problems compared to their less innovative counterparts.

Moreover, Cucculelli and Peruzzi (2020) investigate Italian manufacturing firms and confirm that business model innovation positively contributes to firms' survival. Usman (2016) also investigates commercial banks in Pakistan and finds that financial innovation reduces bankruptcy risks. Similarly, R&D intensity, technology innovation, patent ownership (Shin *et al.*,

2020), and other innovations are crucial for firm survival (Civelek *et al.*, 2021). For these reasons, the first hypothesis might be created as follows:

H1a: *There is a negative relationship between the innovativeness of SMEs and their bankruptcies.*

On the other hand, competition might be a determinant factor in firms' bankruptcies (Aziz *et al.*, 2021) because firms that depart from competition face more financial distress. Thus, having a competitive attitude is crucial for SMEs to reduce their probability of facing financial problems, including bankruptcies (Kliestik *et al.*, 2020). Štefko *et al.* (2020) also express that when the competitiveness of firms becomes reduced, they become more likely to face bankruptcy issues. Similarly, Karas and Režňáková (2021) examine SMEs from EU–28 countries and highlight the fact that SMEs' limited competitiveness can be a reason of their higher probabilities to default compared to their larger counterparts. In this regard, competitive firms might become good at reducing their bankruptcy risks in their operating markets. For instance, Eisdorfer and Hsu (2011) analyze US businesses and prove that firms with less competitive power in technological circumstances are more likely to become bankrupt than their more competitive rivals. These researchers also mention that since patent ownership indicates competitiveness, firms with fewer patents can face more bankruptcy issues.

Aziz *et al.* (2021) also observe 179 US firms and declare that competitive intensity reduces firms' bankruptcy risk. In this regard, firms in highly competitive environments become more competitive and reduce their bankruptcy risk. Moreover, Lee and Ikram (2022) also investigate SMEs in Vietnam and posit that competitiveness is a prerequisite for the survival of these businesses. Furthermore, Belas *et al.* (2021) analyze SMEs from the Czech Republic, Poland, Slovakia, and Hungary and vindicate that as an indicator of firm competitiveness, corporate social responsibility lowers the probability of SMEs' bankruptcy. Having these arguments makes this paper set another hypothesis that is presented below:

H1b: *There is a negative relationship between the competitiveness of SMEs and their bankruptcies.*

Innovation has also been one of the significant drivers of business growth (Civelek *et al.*, 2021) since it makes positive contributions to firms' value-creating activities, profitability, return on assets (Usman, 2016), and returns on investments that signal firms' financial power (Tajeddini, 2016). In addition, firms applying innovative activities regarding business processes decrease their operating costs and reduce ineffective actions in production; thus, they not only increase their profits and the quality of their products but also implement new procedures, methods, and technologies in their operations (Shashi *et al.*, 2019).

Some studies also support that SMEs' innovative activities positively impact their financial performance (Le & Ikram, 2022; Nogueira *et al.*, 2018; El Charani *et al.*, 2022; Tajeddini, 2016). For instance, Shashi *et al.* (2019) investigated 374 Indian manufacturing SMEs and confirmed the positive effect of innovativeness on financial performance. Varis and Littunen (2010) also analyze Finnish SMEs and prove the positive association between process innovation and the financial performance of SMEs. Moreover, by examining SMEs in the US, Roach *et al.* (2016) substantiate the positive impacts of product innovation on financial performance. Similarly, Zulu-Chisanga *et al.* (2016) examine small firms in the UK and verify that new product introduction signals the innovativeness of enterprises, which is positively related to firms' financial performance. On the other hand, Yankson *et al.* (2022) analyze insurance companies and observe that innovative service actions increase insurance firms' financial performance. The empirical findings of these researchers make this paper set another hypothesis, as presented below:

H2a: There is a positive relationship between the innovativeness of SMEs and their financial performance.

Although SMEs have to operate with a lack of financial assets, their need for cash and receivables is vital for their long-term survival. This fact makes them more competitive, which causes increases in their financial performance (Karadağ, 2018). In addition, different advantages enable firms to become more competitive, such as advantages in manufacturing, R&D, business processes, resources, products, services, technology, workforce, know-how, and market share.

Firms with some of those advantages get more competitive power, and their net profit and financial performance increase (Kim & Kim, 2021). For

instance, Williams *et al.* (2018) examine small firms in the USA and declare that firms indicating better results relative to return on equity, return on assets, and net profit margin show better financial performance against their less competitive rivals. The positive relationship between firm competitiveness and financial performance has also been confirmed by some studies that analyze SMEs in various countries, including Hungary (Markus & Rideg, 2020), Ghana (Agyabeng-Mensah & Tang, 2021), and Turkey (Karadağ, 2018). On the other hand, by analyzing some European countries, Kliestik *et al.* (2020) also declare a positive relationship between competitiveness and financial performance. Due to the findings of the studies mentioned above, another hypothesis might be generated, as provided below:

H2b: *There is a positive relationship between competitiveness and the financial performance of SMEs.*

SMEs having financial risk management problems might face bankruptcy, credit default, and insolvency problems. In this regard, innovative actions are a prerequisite for businesses' risk management (Jenkinson *et al.*, 2008). For instance, Yankson *et al.* (2022) examine some companies in Ghana and state that innovation makes business effective risk management since innovative firms can reduce their operation costs and create value-added products that increase their income from sales. When SMEs make technology investments, they receive more benefits regarding enterprise financing. Innovations that stem from developing novel goods and implementing new technologies also increase SMEs' market share and income (Pang & Gai, 2022).

Nwekpa *et al.* (2018) emphasize that innovative firms increase their sales and financial assets more than their less innovative counterparts. On the other hand, firms in manufacturing and high-tech industries have increasing returns to scale, and thus, they are more likely to have better results from financial ratios (asset liability, current, liquidity, etc.) that indicate better financial conditions (Pang & Gai, 2022). Moreover, Belas *et al.* (2021) analyze SMEs in V4 countries (Visegrad) and affirm the positive relationship between innovation and the financial risk management of SMEs. Innovative firms with better financial conditions can also invest in IT technologies to reduce their concerns regarding financial risk management issues (Donkor *et al.*, 2018). For these reasons, the innovative activities of

SMEs increase their financial power, and they become effective in financial risk management. Those arguments enable this research to set another hypothesis, as presented below:

H3a: There is a positive relationship between innovativeness and the financial risk management of SMEs.

Since there is fierce competition in the business environment and especially in some sectors, enterprises face various financial risks and apply some competitive strategies to manage and overcome the negative outcome of financial risk. Hence, competitiveness is crucial for risk management practices (Yang *et al.*, 2018). For instance, Brustbauer (2016) analyzes Austrian SMEs and endorses that firms doing business in competitive industries are more prone to apply risk management strategies. Rehman and Anwar (2019) also investigate Pakistani SMEs and reveal that SMEs implementing competitive strategies such as prospector, defender, analyzer, and reactor strategies are effective in risk management practices. Similarly, Yang *et al.* (2018) posit that businesses applying competitive strategies such as cost leadership and differentiation are good at adjusting risk management processes and reducing their risks. For these reasons, businesses need to create such competitive strategies to reduce their risks (Liu *et al.*, 2021) and to have effective financial risk management (Rehman & Anwar, 2019).

According to Klietnik *et al.* (2020), firms with competitive advantages can effectively measure their profitability, liquidity, and indebtedness ratios. The positive relationship between risk management and competitiveness has also been vindicated by researchers analyzing SMEs in various markets such as China (Liu *et al.*, 2021) and Pakistan (Yang *et al.*, 2018). Furthermore, the positive relationship between the management of capital structure and competitiveness has also been confirmed by Nohong *et al.* (2019), who examined SMEs in Indonesia. Furthermore, some researchers investigated European SMEs and observed the positive association between risk management and competitiveness of Austrian (Brustbauer, 2016), Italian (Crovini *et al.*, 2021), and Slovakian SMEs (Hudakova *et al.*, 2018).

H3b: There is a positive relationship between competitiveness and financial risk management of SMEs.

Although the arguments of some of the researchers have been used to create research hypotheses, some of those studies focus on a single relationship between the ability of SMEs and one of the SMEs' financial concerns in a country-based method. Moreover, most of those studies consider financial statement analyses to evaluate firms' financial performance and other financial indicators. Unlike those studies, this paper used a questionnaire to inform the executives' perceptions of financial issues. Moreover, since the research models include different variables (various abilities and financial concerns), they provide more extensive analyzes related to investigated topics. The following section will present the details regarding these research models, data collection methods, and other methodological approaches.

Research methods

This paper's objective is to determine whether or not innovative and competitive attitudes of SMEs affect their perception of financial risks, including bankruptcy problems, financial performance, and financial risk management. The researchers used Cribis database for the selection of Czech and Hungarian samples while the database of the Budapest Chamber of Commerce was employed to select firms from Hungary. Cribis database includes audited firms from the Czech Republic and Slovakia. On the other hand, all new established firms in Budapest, Hungary have to be registered in the Budapest Chamber of Commerce, thus, this database includes all firms that operate in this market. The research team selected 8250 Czech, 10100 Slovak and 8750 Hungarian SMEs from those databases. After that SMEs (firms that have lower than 250 workers) were determined and numbered depending on alphabetical order. Then, Randbetween Math function was run, while the range was determined between one to the greatest serial number. Prospective firms who would fulfill an online questionnaire gained numbers that were randomly generated. The researchers directed the link of an internet-mediated questionnaire survey with randomly selected SMEs by sending e-mails. Finally, 454 Czech, 368 Slovakian, and 399 Hungarian SMEs' owners and managers fulfilled the online questionnaire. Thus, the average response rate for the survey is about 5%. The data collection process was completed in 2020. In line with the research aim, the re-

searchers have directed to the following statements from the questionnaire that are presented in Table 1.

The researchers use a three points Likert Scale to scale the responses for the statements that are shown in Table 1, and the responses are scaled as “1 – disagree”, “2 – neutral”, and “3 – agree”. Although the scale used in this paper is no longer a Likert scale in principle, it is a kind of transformation of it. For instance, from a five point Likert scale two scales namely “agree” and “completely agree” can be combined as a scale. Same approach can be followed for “disagree” and “completely disagree”. By doing so, a-five point Likert Scale can be transformed to a three points Likert Scale.

When respondents select greater volumes from this scale, they mean that their firms are competitive or innovative and less likely to face bankruptcy risk within five years, indicating greater financial performance and financial risk management. A three-point Likert scale ranks the variables that this paper has investigated. Thus, the researchers employ Ordinal Logistic Regression Test in SPSS program by running the logit function.

Ordinal Logistic Regression has an algorithm that shows changes in the cut-offs (levels) of variables and evaluates latent continuous variables (Harrell, 2015). The dependent and the independent variables in all of the research models have two cut-offs (levels) because they are measured by Three points Likert Scale (“1 – disagree”, “2 – neutral”, and “3 – agree”). For instance, while Innovation=1 or bankruptcy=1 express the cut-off value between the answers of “disagree” to “neutral,” innovation=2 or bankruptcy=2 declare the cut-off value between the answers of “neutral” to “agree”.

Ordinal Logit Regression Models that the researchers have generated are as follows:

$$\text{Logit}(P(Y \leq j)) = \beta_{j0} + \beta_{j1} X_1 + \beta_{j2} X_2 \quad (1)$$

where:

- Y Ordinal outcome, dependent variable (Y₁: bankruptcy risk for Model 1, Y₂: financial performance for Model 2, Y₃: financial risk management for Model 3)
- J categories
- X₁ Independent variable (X₁: innovativeness in all research models)
- X₂ Independent variable (X₂: competitiveness in all research models)
- B₁ Regression coefficients

β_0 Constant or intercept term.
P predictor

On the other hand, the assumption testing for the created Ordinal Logistic Regression models is performed by the researchers. In this regard, the researchers use volumes from Model Fitting, Goodness of Fit, Test of Parallel Line, -2 Log-likelihood, and Chi-square indicators. The results from those assumption tests are presented in Table 2. The researchers consider a 5% level of significance to verify or violate the assumptions.

-2 Log-likelihood and Chi-square tests indicate whether adding independent variables improves the overall model fit. For example, according to Table 2, p values presented under the Model Fitting column are significant at a 5% significance level (Model 1= $\chi^2(4) = 59.243$, Sig, $p < 0.05$; Model 2= $\chi^2(4) = 119.341$, Sig, $p < 0.05$; Model 3= $\chi^2(4) = 71.005$, Sig, $p < 0.05$). Thus, it can be stated that when innovativeness and competitiveness are added to the research models, they make better predictions for the dependent variables. For this reason, innovativeness and competitiveness are good indicators when predicting the dependent variables.

Table 2 shows Cox & Snell, and Nagelkerke's statistics indicating the overall model fit. The values from those statistics show how many percent of the variations in the dependent variables can be explained by innovativeness and competitiveness. For instance, when innovativeness and competitiveness are added in the 1st, 2nd, and 3rd research models, they represent 5.8%, 11.5%, and 7.4% variabilities in the dependent variables, because the volumes from Nagelkerke statistics for Model-1, Model-2 and Model-3 are 0.058, 0.115, and 0.074, respectively.

Moreover, the Test of Parallel Lines is depicted in the assumption testing to show whether similarities exist between the slope coefficients of the two cut-offs (levels). As already stated, this paper measures the responses by employing a three-points Likert Scale with two cut-offs. The p values must be higher than the 5% significance level to validate this assumption. Since the p values for the research models are greater than the selected significance level (0.055, 0.075, and 0.061, respectively), this paper also fulfills this assumption. For the reasons mentioned above, this paper fulfills the assumptions. In this regard, the researchers employ the Ordinal Logistic Regression test to analyze the research data in line with the specified research aim.

Similar to the other analyses, the researchers selected a 5% significance level when testing research hypotheses. The p values lower than a 5% sig-

nificance level cause to support the hypotheses and vice versa. Null hypotheses presume the nonexistence of significant relationships between independent and dependent variables. In this regard, p values greater than 5% significance level cause accepting the null hypotheses. The sample profile is presented in Table 3.

Results

Table 4 illustrates the findings from the 1st research model. According to Table 4, while the cut-off values for innovativeness are statistically significant at a 5% significance level (Innovativeness = 1: 0.000, Innovativeness= 2: 0.0041), the cut-off values for competitiveness=2 are not significant (competitiveness=2: 0.066). Therefore, while firm innovativeness significantly predicts bankruptcy, competitiveness does not. On the other hand, the coefficients (estimate) for innovativeness are positive in Model-1 (0.802 and 0.455, respectively). In this regard, a one-unit increase in SMEs' innovativeness 0.455 times lower the odds of occurrence of bankruptcy risk with a 95% confidence interval (CI) between 0.019 and 0.890. In other words, SMEs with higher values in innovativeness less intensively perceive bankruptcy risk compared to less innovative SMEs. Thus, this paper supports the H1a hypothesis that suggests the negative relationship between firm innovativeness and bankruptcy risk. On the other hand, since competitiveness is not a determinant factor in SMEs' perception of bankruptcy risk, the competitiveness of SMEs does not determine their bankruptcy risk perception. Thus, this paper fails to support H1b hypothesis.

Table 5 shows the results regarding 2nd research model. Concerning the cut-off values for innovativeness, they are significant at a 5% significance level. (Innovativeness = 1: 0.000, Innovativeness= 2: 0.005). However, the cut-off value for competitiveness=2 is insignificant (competitiveness=2: 0.882). In this regard, it can be argued that competitiveness is not a significant predictor of financial performance, and innovativeness is a significant predictor of financial performance. Since the coefficients (estimate) for innovativeness are negative (-1.543 and -0.626, respectively), a one-unit decrease in innovativeness, 1.543 times higher the odds of occurrence for better financial performance for SMEs with 95% CI between -1.961 and -1.126. Thus, firms can have higher financial performance in case of being less innovative. For this reason, the H2a hypothesis is not supported. On the

other hand, since the financial performance of SMEs does not depend on their competitiveness, this paper also fails to support the H2b hypothesis.

Corresponding to the results of 3rd research model, they are shown in Table 6. P values for the cut-offs of “innovativeness=2” and “competitiveness=2” are not significant at a 5% significance level (0.248 and 0.786, respectively). Hence, competitiveness and innovativeness are not significant predictors of financial risk management. In other words, the competitiveness and innovativeness of SMEs neither affect their financial risk management nor have positive or negative impacts on managing their financial risk. In this regard, this paper fails to support both H3a and H3b hypotheses.

Discussion

According to the results, this paper finds that more innovative SMEs are less likely to face bankruptcy risk than less innovative SMEs. In this regard, this paper finds similar results with the studies by Giovannetti *et al.* (2009), Cucculelli and Peruzzi (2020), and Kaya (2022), who investigate enterprises from different markets such as Italy, Germany, France, Spain, and the Netherlands. Those researchers confirmed the fact that more innovative enterprises have more resistance against bankruptcy issues comparing with their less innovative counterparts.

On the other hand, the result of this paper regarding the innovativeness and bankruptcy of SMEs is not compatible with the studies of Børing (2015), Nogueira *et al.* (2018), and Boyer and Blazy (2014). For instance, by analyzing 148 Spanish SMEs, Nogueira *et al.* (2018) state that firms' innovations in their production give them lower survival chances. Moreover, Børing (2015) analyzes Norwegian firms, and Boyer and Blazy (2014) investigate French firms. These studies substantiate that firms with more R&D intensity are more likely to face a higher risk of failure. Since the R&D expenses of Spain, Norway, and France are higher than the Czech Republic, Hungary, and Slovakia (Statista, 2022), lower R&D intensity in these countries might have made SMEs lower the volume of innovation investments that cause a lower probability of bankruptcies. This finding might ground the difference between this paper and the others (Børing, 2015; Nogueira *et al.*, 2018; Boyer & Blazy, 2014).

Furthermore, this paper indicates that SMEs having more innovative activities show lower financial performance than their less innovative counterparts. Thus, this paper has compatible results with the study of Zhang (2021). According to Zhang (2021), firms taking more innovative actions developing products and making more R&D investments face with more financial barriers due to increases in their expenditures that negatively affect their financial performance. However, the result of this paper opposes the findings of Varis and Littunen (2010), Roach *et al.* (2016), and Zulu-Chisanga *et al.* (2016) since these researchers prove the positive impacts of innovativeness on firms' financial performance by analyzing SMEs in Finland, USA, and the UK, respectively.

The reason why this paper differs from others might be related to the sample profile. In this study, most firms are microenterprises (63.39% of the entire sample). Microenterprises have a lower amount of financial assets than their larger counterparts. Therefore, microenterprises in the research sample might have invested their financial sources for innovation activities, which might be the reason for their low financial performance level. However, the studies of Varis and Littunen (2010), Roach *et al.* (2016), and Zulu-Chisanga *et al.* (2016) include more small and medium-sized enterprises in their research sample than in this study. For this reason, these studies might confirm the positive association between innovativeness and firm performance.

On the other hand, unlike Donkor *et al.* (2018) and Belas *et al.* (2021), who confirmed the positive association between innovativeness and financial risk management, this study does not confirm any association among those indicators. In this context, this paper is accordant with the finding of Calantone *et al.* (2006) that does not find any relationship between innovativeness and management of profitability by firms that is an indicator of effective financial risk management.

The sectors where SMEs operate might be the reasons for the differences between this research and the others. Compared to other industries, manufacturing SMEs make more R&D activities and investments for innovative actions (Lejárraga & Oberhofer, 2015). With those capabilities, SMEs in the manufacturing industry might have more income to reduce their financial management concerns. However, while the other studies (Donkor *et al.*, 2018; Belas *et al.*, 2021) have more manufacturing firms in their samples, just 17.61% of the SMEs analyzed in this research operate in the manufac-

turing industry. For this reason, the difference between this research and the others exists.

This paper does not confirm any significant relationship between competitiveness and bankruptcy, financial performance, financial risk management, respectively. In this regard, this result is akin to the study by Cerasi *et al.*, (2017) which does not find any significance between the product competition of Italian manufacturing firms and their probability of default. Moreover, the result of this paper regarding competitiveness and financial risk management is consistent with the study of Salazar *et al.* (2012), which verifies the nonexistence of the relationship between analyzed Mexican firms' competitiveness and their financing, working capital and financial investment decisions.

However, this paper's result is not similar to the findings of the study of Eisdorfer and Hsu (2011) since these researchers emphasize that more competitive firms are less likely to face bankruptcy issues. Concerning the impacts of competitiveness on financial performance, this paper does not find any significant impact on competitiveness. Hence, this result is not in line with the study of Williams *et al.* (2018), which confirms the positive effect of competitiveness on the financial performance of SMEs. Unlike Brustbauer (2016), who argued the positive association between competitiveness and financial risk management, this paper does not find any significant relationship between those variables. The reason why this paper finds different results from Eisdorfer and Hsu (2011), Williams *et al.* (2018), and Brustbauer (2016) might be related to the competitiveness of the markets where the analyzed firms operate because fiercer competition in markets makes companies more competitive and facing fewer bankruptcy issues. As already declared, Eisdorfer and Hsu (2011), Williams *et al.* (2018), and Brustbauer (2016) analyzed firms in the US and Austrian markets. The country rankings of the USA and Austria in the World Competitiveness Index are higher than the Czech Republic, Slovakia, and Hungary (IMD, 2022). In this regard, policymakers in those countries need to create a more competitive environment for SMEs and make more investments to increase SMEs' capabilities regarding entrepreneurship and financial management. More details regarding policy implications will be presented in the Conclusions section.

Conclusions

Being constrained regarding their tangible assets makes SMEs feel more concerned about their bankruptcy, financial performance, and financial risk management issues that belong to financial risk. However, to overcome those problems, SMEs can use their intangible assets, such as their innovative and competitive capabilities, since those attitudes enable SMEs to create competitive advantages, generate revenues, and reduce their financial risk concerns. Within this context, this paper aims to examine the effects of innovative and competitive postures of SMEs on their bankruptcy, financial performance, and risk management concerns.

To achieve this objective, the researchers randomly selected 1221 Czech, Slovak, and Hungarian SMEs from Cribis and the Budapest Chamber of Commerce databases. To collect research data, the researchers direct the online questionnaire link by email to the randomly chosen survey participants who are the managers or owners of SMEs. Furthermore, the researchers employ Ordinal Logistic Regression Test in SPSS statistical program when analyzing the relationship between purposed relationships.

The results of this paper regarding innovativeness and financial risk concerns prove the negative impacts of innovativeness on firms' bankruptcies and financial performance. Thus, while more innovative SMEs feel less concerned about bankruptcy issues, they indicate lower financial performance than their less innovative counterparts. Although innovativeness negatively impacts bankruptcy and financial performance, it does not have any significant relationship with the financial risk management of SMEs. The investments that governments make for R&D activities, firm size, and sectors might be reasons for this paper's differences compared to other studies. The results regarding the competitiveness of SMEs substantiate the nonexistence of any significant relationships between competitiveness, bankruptcy, financial performance, and financial risk management, respectively. These results might be related to the competitiveness in the business environment where SMEs are located.

To create a more competitive environment, governments can increase the quality of the institutions that make legal, economic, and social decisions. For instance, they can impose bankruptcy, collateral, and other laws that might reduce SMEs' financial concerns and secure fair market competition. Furthermore, concerning the R&D expenses of countries, the governments of countries can create a network that SMEs can be a member of. In

this case, SMEs can provide their valuable projects to be financed by governments.

Moreover, since other institutions, such as the European Union, provide many opportunities for R&D activities, governments can stimulate SMEs to apply for those funding opportunities. In this regard, governments can provide educational courses to inform company executives how to use those funding options. In those courses, policymakers can also increase the risk management experience of firm executives by implementing practical training for them. By doing so, risk awareness, risk evaluation, and management capabilities of executives can be rapidly increased. On the other hand, training can include some educational sections that increase SMEs' entrepreneurial abilities and financial management capabilities. As a result, even though SMEs lack financial resources, they can establish a strong control mechanism by hiring a new experienced risk analyst or educating existing employees to make them more experienced risk analysts. Moreover, since the employees gain more knowledge from such activities and experience, their motivation also increases.

The researchers include various RBV characteristics and financial problems of SMEs in a unique study. Moreover, this paper identifies the major financial problems of SMEs and provides the reasons for those obstacles with their solutions. This study also differs from other studies by investigating the relationship between various entrepreneurial characteristics of SMEs from different countries and various financial issues that SMEs face. Thus, examining the relationship between those variables that have not been included in any study is the main research gap that this paper fulfills. Therefore, this paper has a comprehensive scope and results regarding the relationship among those variables, which are crucial facts compared to other studies.

Although this paper has been written internationally and comprehensively regarding the specified relationships, it is limited to some extent. As already stated, this paper considers firm executives' self-evaluation regarding their firms' bankruptcy probabilities, financial performance, and financial risk management. Therefore, this paper's evaluation of financial risk is based on non-financial performance measurements such as subjective thoughts or judgments of firm executives. In this regard, this paper lacks financial data consisting of financial statements, ratios, etc. Similar with this issue, this paper also analyzed innovativeness and competitiveness of SMEs by considering the survey respondents' perceptions of the innova-

tiveness and competitiveness of the surveyed enterprises, not their actual competitiveness and innovativeness. For instance, further studies can focus on some indicators, such as R&D expenses, intensity, alliances, patent-trademark ownership, to evaluate actual innovativeness of companies.

Another limitation of this research is related to the entrepreneurial abilities that this paper analyzes. All dimensions of entrepreneurial orientation, including innovativeness, risk-taking, proactiveness, competitive aggressiveness, and autonomy, can be included in further studies to overcome this limitation that this paper has. On the other hand, the research data consists of SMEs from only three countries with similar cultural, economic, and historical backgrounds. Moreover, most firms in the research sample are microenterprises, have operated for more than ten years, and only a few operate in the manufacturing industry. Thus, new studies should have a sample including more companies that are more experienced, larger-sized, and operate in the manufacturing industry. New studies can also investigate SMEs' financial and entrepreneurial conditions from advanced and less developed countries to better compare the states with different cultural, economic, and historical values. Moreover, besides focusing on executives' perceptions, further studies can also analyze companies' financial statements and balance sheets to express SMEs' financial conditions.

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Annex

Table 1. Variables and measurements

Variables	Measurements
Innovativeness	"We place great emphasis on the innovation of our products and services, and it is positively reflected in the performance of the company"
Competitiveness	"Business competition motivates us to perform better"
Bankruptcy	"There is no risk of bankruptcy for our (my) company within 5 years"
Financial performance	"I evaluate the financial performance of our (my) company positively"
Financial risk management	"I can adequately manage the financial risk in my (our) company"

Table 2. Assumptions testing

Assumptions	Model fitting				Goodness of fit Pseudo R-square		Test of parallel lines			
	-2 Log likelihood	Chi-Square	df	Sig.	Cox & Snell	Nagelkerke	-2 Log likelihood	Chi-Square	df	Sig.
Model 1	164.466	59.243	4	0.000	0.047	0.058	1052.223	17.650	4	0.055
Model 2	228.693	119.341	4	0.000	0.093	0.115	1093.522	15.011	4	0.075
Model 3	167.102	71.005	4	0.000	0.056	0.074	960.977	16.707	4	0.061

Note: Sig.: significance

Table 3. Sample profile

Items	Categories	<i>n</i>	Share
Country	Czechia	454	37.18%
	Slovakia	368	30.14%
	Hungary	399	32.68%
	Total	1221	100%
Firm size	Micro	774	63.39%
	small	286	23.42%
	medium	161	13.19%
	Total	1221	100%

Table 3. Continued

Items	Categories	<i>n</i>	Share
Firm age	up to 5years	193	15.81%
	6 to 10 years	178	14.58%
	more than 10 years	850	69.61%
	Total	1221	100%
Firm sector	manufacturing	215	17.61%
	retailing	212	17.36%
	service	473	38.74%
	others	321	26.29%
	Total	1221	100%

Table 4. The findings for the 1st research model

Variable	Estimate	S.E.	Wald	df	Sig.	95% CI [Lower Upper]
MODEL-1						
Bankruptcy = 1	-0.571	0.233	6.036	1	0.014	[-1.027 -0.116]
Bankruptcy = 2	0.884	0.233	14.416	1	0.000	[0.428 1.341]
Innovation = 1	0.802	0.209	14.688	1	0.000	[0.392 1.212]
Innovation = 2	0.455	0.222	4.183	1	0.041	[0.019 0.890]
Competition = 1	0.921	0.191	23.358	1	0.000	[0.547 1.294]
Competition = 2	0.401	0.218	3.390	1	0.066	[-0.026 0.828]

Note: S.E.: Standard Error, df: Degree of freedom, CI: Confidence intervals.

Table 5. The findings for the 2nd research model

Variable	Estimate	S.E.	Wald	df	Sig.	95% CI [Lower Upper]
MODEL-2						
Performance = 1	-0.818	0.236	12.001	1	0.001	[-1.281 -0.355]
Performance = 2	0.647	0.237	7.459	1	0.006	[0.183 1.111]
Innovation = 1	-1.543	0.213	52.597	1	0.000	[-1.961 -1.126]
Innovation = 2	-0.626	0.221	7.993	1	0.005	[-1.059 -0.192]
Competition = 1	-0.654	0.200	10.670	1	0.001	[-1.047 -0.262]
Competition = 2	-0.034	0.227	0.022	1	0.882	[-0.479 0.411]

Note: S.E.: Standard Error, df: Degree of freedom, CI: Confidence intervals.

Table 6. The findings for the 3rd research model

Variable	Estimate	S.E.	Wald	df	Sig.	95% CI [Lower Upper]
MODEL-3						
Fin. Man. = 1	-0.102	0.244	0.174	1	0.677	[-0.580 0.376]
Fin. Man. = 2	1.695	0.258	43.245	1	0.000	[1.190 2.200]
Innovation = 1	-0.855	0.225	14.395	1	0.000	[-1.296 -0.413]
Innovation = 2	-0.273	0.236	1.337	1	0.248	[-0.736 0.190]
Competition = 1	-0.744	0.207	12.922	1	0.000	[-1.149 -0.338]
Competition = 2	0.063	0.232	0.073	1	0.786	[-0.392 0.517]

Note: S.E.: Standard Error, df: Degree of freedom, CI: Confidence intervals.