



Exploring the indirect links between enterprise risk management and the financial performance of SMEs

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Abstract

This paper responds to the lack of empirical evidence on how enterprise risk management (ERM) and the financial performance of small and medium-sized enterprises (SMEs) are related. Structural equation modeling is used to explore new mediators in the relationship between ERM and SME financial performance. The results show that organizational culture (mission dimension) and strategic risk management performance are full and positive mediators between ERM and financial performance. These research results highlight the fact that the implementation of ERM in an enterprise does not by itself generate the expected effects without the existence of a mature organizational culture and the monitoring of strategic risk management performance. These findings are particularly relevant for SMEs with “pretend ERM” that lacks the strategic and operational components. ERM also helps to transform the negative effect of foreign capital in SME equity on financial performance into a positive effect.

Keywords Enterprise risk management · SMEs · Structural equation modeling · Organizational culture · Strategic risk management performance

JEL Classification G32 · M14 · M20

Introduction

Increasing levels of uncertainty call for proactive risk management in all organizations. The parallel crises triggered by the COVID-19 pandemic (Chakraborty and Maity 2020) and the military conflict in Ukraine have impacted most industries and

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businesses, unlike the Great Recession of the late 2000s, which primarily affected the financial sector (Gertler and Gilchrist 2018). Systematic risk has long been underestimated in advanced economies (Pagach and Wiczorek-Kosmala 2020). In such a situation, an intuitive assessment of risk outcomes, as often performed by smaller enterprises, is not enough (Grondys et al. 2021). Companies face new challenges and find it harder to maintain their profitability and competitiveness. Therefore, holistic enterprise risk management (ERM) is becoming increasingly important in small and medium-sized enterprises (SMEs).

Nonfinancial SMEs are mostly unregulated. Thus, there is little pressure to implement a comprehensive risk management system. Nevertheless, in recent years, SMEs have started implementing formal risk management processes to increase their competitiveness (Wirahadi and Pasaribu 2022). ERM improves the quality of the information about enterprise risk profiles. The adoption of ERM reduces systematic risk. The purpose of ERM is to reduce the probability of losses and, therefore, reduce the need to borrow external resources, which positively impacts the expected cost of capital (Berry-Stölzle and Xu 2018).

The implementation of a risk management system entails many internal changes. International risk management standard ISO 31000 provides principles, frameworks, and procedures for risk management regardless of the size and orientation of the organization (Aven 2017). The Committee of Sponsoring Organizations of the Treadway Commission (COSO) provides an alternative ERM framework. Such strategic changes are financially and organizationally challenging and sometimes take several years to implement. The difficulty of implementing a holistic risk management system such as ERM may not be as great for large and capital-intensive companies. Nevertheless, the organizational integration of ERM can take a long time given the complexity of the organizational structure of large companies. On the other hand, SMEs usually do not have as high of a capital capacity for implementing ERM, but organizational integration may be faster due to the greater flexibility of SME decision-making (Adomako et al. 2021).

SMEs are a vulnerable group of companies because they may lack the resources necessary to overcome a crisis (Rathore and Khanna 2020). At the same time, the high volatility of the economic environment exacerbates the uncertainty and unpredictability of economic factors, increasing the risk associated with doing business (Gengatharan et al. 2020). In addition, the size of the business influences the amount of risk taken, which is generally lower for larger companies (Jenny 2020). Moreover, SMEs are a vital part of the European economy. The average value contributed by SMEs to the economy in the European Union is approximately 56% (Statista 2021).

Most research on ERM has been conducted empirically in large financial and publicly traded companies in emerging markets (Florio and Leoni 2017). SMEs are largely unregulated, and there is no intense pressure to implement a holistic risk management system. However, SMEs are now in a more difficult situation. ERM is a way for SMEs to proactively manage their business risks while improving their business performance, as confirmed among large enterprises (Syrová and Špička 2022b). The research gap lies in the unanswered question of whether the implementation of ERM improves the financial performance of SMEs.



This article responds to the ongoing crisis and changes in the business environment. The authors emphasize the growing need to study the impact of the ERM approach among SMEs. ERM can significantly contribute to the maintenance of company competitiveness and crisis survival. This research results in the development of a new model that extends the theoretical understanding of ERM in SMEs. The study reveals significant mediators that positively influence the relationship between ERM and firm financial performance. The findings provide a critical understanding of the role of ERM in SMEs and the realization that the ERM approach is not self-sustaining. Simply implementing an ERM approach does not directly impact SME performance.

This research focuses on the implementation of ERM in Czech SMEs. The Czech Republic is a Central European country, and most Czech SMEs were established in the early 1990s after forty years under the centrally planned socialist economy. The Czech Republic is an open and export-oriented economy in which services and industry play a dominant role. It has been operating in the European Union's single market since 2004. The contribution of SMEs to GDP is approximately 40%, below the EU average, and SME exports account for more than half of all Czech exports (Bures 2017). The management of SMEs in the Czech Republic was affected by the loss of business continuity. An integral part of the transformation into a postsocialist economy was the incorporation of risk into management decisions in the 1990s. Research from neighboring Slovakia shows that risk management was conducted in a relatively intuitive manner, without data support or the appropriate methods, know-how, and trained staff to make management decisions (Klučka and Grünbichler 2020). The study by Virglerova (2019) points out the lack of financial risk management experts.

This paper explores the relationship between ERM and subjective financial performance among nonfinancial SMEs in the Czech Republic. To achieve this goal, the study quantifies the mediating effects of organizational culture and strategic risk management performance and recapitulates the previously revealed mediators of this relationship. The main contribution of the paper lies in the development of a new model for studying the impact of ERM on the subjective financial performance of SMEs. The results show that organizational culture (mission dimension) is a catalyst for ERM effects, while at the same time, the implementation of an ERM performance monitoring system improves the subjective financial performance of the enterprise. The originality of the paper is in showing that ERM is not self-sustaining. ERM does not spill over to all levels of management nor have desirable effects on the strategic financial objectives of the SME without a strong organizational culture and a good performance monitoring system.

Theoretical foundation

The goal of risk management is to minimize key risks, and an appropriate level of risk management that enhances value for owners and other stakeholders must be chosen (Meulbroek 2002). The ERM approach focuses on all potential future risks (both pure and speculative) (Schiller and Prpich 2014). Enterprises can focus on



risk management opportunities by incorporating the dual nature of speculative risks (Lundqvist 2015).

The ERM approach should, among other things, explicitly identify the threats to firm value and the opportunities to increase it (Gatzert and Martin 2015). The findings of a systematic literature review (Syrová and Špička 2022b) show that the relationship between ERM and company performance is not direct but is mediated by strategic agility (Ai Ping et al. 2017), competitive advantage (Yang et al. 2018), strategic planning (Sax and Andersen 2019), and information systems quality (Kurdi et al. 2019). Previous research has mainly been conducted in listed companies and large international firms (Callahan and Soileau 2017; Farrell and Gallagher 2019; Kommunuri et al. 2016; Laisasikorn and Rompho 2014; Malik et al. 2020; Quon et al. 2012). Only a few studies have focused on SMEs. The results of the recent research studies show mostly positive relationship between ERM and SME performance (Hanggraeni et al. 2019; Jenya and Sandada 2017; Rehman and Anwar 2019; Yang et al. 2018). However, the results of some studies on SMEs identified the relationship between ERM and performance as insignificant (Glowka et al. 2020; Hiebl et al. 2019). Other studies quantified the relationship ambiguously depending on the analysis of the individual components of ERM (Heong and Teng 2018; Yakob 2019). The authors of the studies conducted in SMEs mainly used subjective assessment of firm performance and multiple regression analysis.

The purpose of ERM is to integrate risks into the enterprise's organizational design and decision-making process (Ogutur et al. 2018). Given that ERM is a critical initiative that helps increase organizational resiliency in times of uncertainty, it is reasonable to assume that the internal culture of the firm is a significant factor in ERM adoption. Indeed, ERM adopters encounter issues related to organizational culture, but the mediating effect of organizational culture on the relationship between ERM and organizational financial performance has not yet been empirically evaluated and demonstrated.

Organizational culture

Organizational culture is the set of the underlying values, beliefs, and assumptions within an organization, the patterns of behavior that result from those perspectives, and the symbols that express the connections among the assumptions, values, and behaviors of organizational members (Denison 1990). Several empirical studies have demonstrated the positive impact of organizational culture on organizational performance (Han 2012; Tadevosyanová 2015; Bhuiyan et al. 2020). However, the effect of organizational culture on the effectiveness of ERM implementation has not yet been demonstrated. Organizational culture enables more effortless penetration of ERM into all functional areas of the organization and faster adaptation under the conditions of risk and uncertainty (Thomya and Saenchaiyathon 2015).

There are different types of organizational culture: market culture, clan culture, adhocratic culture, and hierarchical culture (Cameron and Quinn 2011). Research has shown that only clan cultures positively affect project performance and internal and external organizational performance. In contrast, hierarchical



cultures, market cultures, and adhocratic cultures do not affect organizational performance (Yazici 2011). However, the same research (Yazici 2011) also showed that managerial experience enhances the positive influence of clan culture (on project performance), adhocratic culture (on project performance and internal and external firm performance), and market culture (on external firm performance).

On the other hand, a hierarchical culture does not impact performance because it creates a hostile work environment by bureaucratizing the organizational structure. A hierarchical culture is characterized by a formalized and structured work environment emphasizing procedures and regulations whose unifying element is formal rules. Managers are expected to be good coordinators and organizers who can keep the organization running smoothly, consistently, and efficiently (Cameron and Quinn 2011).

Denison's Organizational Culture Questionnaire is one of the most popular methods for operationalizing organizational culture (Denison 1990). A study by Denison and Mishra (Denison and Mishra 1995) found that all four dimensions of organizational culture—mission, consistency, commitment, and adaptability—were related to various performance criteria. Commitment and adaptability are indicators of flexibility, openness, and responsiveness and are strong drivers of organizational growth. Consistency and mission indicate organizational direction, integration, and vision and are good predictors of profitability. All four characteristics of organizational culture are essential predictors of quality, employee satisfaction, and overall performance. According to Denison, the strongest predictor of performance is the organization's mission, i.e., whether the organization has an articulated mission and whether its employees share that mission. Denison's scales for consistency (e.g., Do you have coordinated systems that allow you to build consensus based on your core values?) and mission (e.g., Do you know where you are going? Do you have clear goals and a strategy to achieve them?") might be good indicators of organizational culture in the context of the relationship between ERM and financial performance.

H1 Organizational culture (mission dimension) mediates the relationship between ERM and the subjective financial performance of SMEs.

H2 Organizational culture (consistency dimension) mediates the relationship between ERM and the subjective financial performance of SMEs.

Through organizational culture, ERM is disseminated and cultivated throughout the organization. The overarching dimensions of organizational culture, namely, consistency and mission, could provide an appropriate implementation framework for ERM because organizational culture is a system of shared assumptions, attitudes, beliefs, habits, and values that form the basis for typical behavior patterns (Gordon 1991).



Strategic risk management performance

Research in strategic risk management has highlighted the importance of creating a risk management culture at all levels of the organization (Moeller 2007). A risk management culture is defined as the shared values and beliefs of an organization's employees (decision-makers) regarding risk-taking (Bui et al. 2018). Through their risk management culture, organizations are able to quickly identify and hedge key risks and respond to and mitigate unforeseen risks while identifying and capitalizing on new opportunities early on using an ERM approach to improve risk performance (Sax and Andersen 2019). A risk management culture is critical to an organization's strategic decision-making and requires the active involvement of the board and senior management. Top management shapes risk culture through leadership, transparent communication, and risk management using appropriate processes and resources (Osman and Lew 2020).

While the impact of ERM and strategic reactivity has been tested in terms of firm performance and value, little is known about the impact of ERM on strategic risk performance (Sax and Torp 2015). Strategic risk management can be integrated into effective, well-known processes to bridge the gap between the risk and strategic management literatures. Risk management is not just the concern of the central risk management department. To create an effective risk management system, the enterprise must build a dynamic risk management team that quickly identifies and addresses new threats and opportunities. Thus, the risk management becomes strategic as it encompasses the culture and leadership styles and is reinforced by strategic responsiveness. Incorporating evaluations of strategic risk management performance as an integral part of governance could make ERM more effective in terms of the financial goals it seeks to achieve. Moreover, the 2017 update to the COSO framework emphasizes the importance of integrating ERM with business strategy and performance (COSO 2017).

H3 Strategic risk management performance mediates the relationship between ERM and the subjective financial performance of SMEs.

Materials and methods

The level of ERM in a company can generally be determined through a questionnaire survey or a content analysis of company documents. Early empirical studies assessed the level of ERM with a binary approach, used primarily in content analysis (Silva et al. 2019). Content analysis can be used as a method to determine the presence of ERM by determining whether ERM is used (1 = the company uses ERM, or relevant keywords are listed in company documents) or not (0 = the company does not use ERM, or relevant keywords are not listed in company documents). However, a binary score alone cannot determine the extent of ERM implementation. For this reason, some authors have adopted an ordinal



measure (Husainia et al. 2019; Darmastuti et al. 2020), with individual ERM metrics (obtained either from a content analysis or a questionnaire survey) summed together. The resulting summation yields the value of a simplified maturity index (Florio and Leoni 2017).

Moreover, the disclosure of risk management information in SME reporting is voluntary. For this reason, the authors of this study choose the quantitative questionnaire survey method. Through the questionnaire survey, it is possible to obtain primary data and more accurate information on the level of ERM implementation in a given company when secondary data in company reports are not available, as with SMEs.

The authors chose quantitative research because the vast majority of previous studies on the relationship between ERM and corporate financial performance have been based on quantitative research. Quantitative research is more objective than qualitative research, and the results are based on larger samples that are representative and generalizable to the population (in this case to SMEs in the Czech Republic). Quantitative research can provide accurate, reliable and consistent data that can be processed using validated statistical methods.

The sample covers nonfinancial SMEs in the Czech Republic. The targeted sample consists of 300 SMEs that are members of the Association of Small and Medium-sized Enterprises in the Czech Republic. The sample size provides sufficient statistical power for the tests. Quota sampling ensures the representativeness of the sample and the generalizability of the results although it is not based on random selection but on a predefined panel of firms willing to respond. Data were collected from September to November 2021 through the external research company Ipsos which closely cooperates with Association of Small and Medium-sized Enterprises in the Czech Republic. Respondents were owners, CEOs, senior managers, sales managers, and finance/commercial managers. These roles should have a sufficient level of responsibility to ensure the accuracy of the responses. Unlike large and multinational companies, SMEs do not typically employ a chief risk officer or risk manager, as risk management is the responsibility of the top management or the business owners. Response variability was calculated and unusual values were identified to clean the original sample of 300 SMEs, and a final sample of 296 respondents was obtained.

The self-reporting is frequently applied for measuring the individual opinions and statements in the quantitative research. Unlike objective measures, which are not affected by personal bias and are represented by facts, the subjective self-reporting is associated with possible biases negatively affecting validity and reliability. Using self-reported information for decision-making results in endogenous selection bias which creates spurious associations between the measure being reported and factors that influence reporting (Scott and Balthrop 2021). However, self-reporting through the batteries of questions is the standard form of information-gathering mechanism for Structural Equation Modelling which effectively tests the relationship between latent variables (Hatcher 2013).



Independent variable (ERM)

The study uses an ordinal scaled ERM index incorporating the number of ERM characteristics. There are 14 characteristics, each taking on a binary value (1 if the company reports the presence of the characteristic, 0 if not). The ERM characteristics were adopted from Miloš Sprčić et al. (2017), who were inspired, for example, by COSO (2004), Lundqvist (2014), and Meulbroek (2002).

The ERM construct (Appendix 1) assumes that SMEs may not have formalized policies or internal regulations regarding risk management. The methodology used to assess the level of ERM has already been validated in empirical research in Central Europe, which has used the same terminology in its construction of the questions (Miloš Sprčić et al. 2017; Marc et al. 2018; Mardessi and Ben Arab 2018).

Dependent variable (subjective financial performance)

Subjective financial performance (Appendix 1) is measured using the validated construct developed by Uhlaner et al. (2014) and is based on three indicators: the financial performance of the company compared to its competitors (5-point scale from 1 = much worse to 5 = much better), profitability in the last fiscal year (7-point scale from 1 = extreme losses to 7 = extremely profitable in the last fiscal year), and current liquidity (4-point scale from 1 = very low liquidity to 4 = substantial liquidity). This subjective assessment of financial performance is not tied to companies' financial statements, which are generally published only by medium-large and large companies (Kamboj and Rahman 2015; Abbasi and Weigand 2017; Kumar et al. 2018). In contrast, a subjective assessment of financial performance is appropriate for questionnaire surveys among SMEs.

Mediators

Organizational culture is the hypothetical mediator of the relationship between ERM and the subjective financial performance of SMEs (Appendix 1). The construct of organizational culture is taken from Denison (1990). Only two dimensions (corporate mission and corporate consistency) are expected to relate to company performance and stability based on previous research (Tadevosyanová 2015). Answers to individual statements are given on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree).

Strategic risk management performance (SRMP) is another hypothetical mediator of the relationship between ERM and the subjective financial performance of SMEs (Appendix 3). The scales for strategic risk management performance were adopted from Sax and Torp (2015), where respondents were asked to make three comparisons with their competitors, considering the past three years, using a 7-point scale (from 1 = significantly worse to 7 = significantly better). Specifically,



the comparisons are ‘Ability to hedge against key known risks and uncertainties’, ‘Ability to respond to and mitigate unforeseen risks’, and ‘Ability to seize new opportunities’.

Control variables

The ERM control variables are firm size as measured by the number of employees (Beasley et al. 2015; Gordon et al. 2009), firm age (Yang et al. 2018), and the proportion of foreign capital in the firm (Syrová and Špička 2022a). Previous studies have shown that foreign direct investment has a positive effect on the ability to use advanced forms of technology, to employ managers with greater international experience and who are more skilled in using modern management techniques, to apply good corporate governance practices and to access credit in international financial markets (Abor 2010). SMEs may have limited opportunities for foreign investment compared to large firms. Another reason could be the historical context of post-communist countries, where fear of foreign investment or investors may still exist.

Structural equation modeling

The method used to explore the relationship between ERM and the subjective financial performance of SMEs is structural equation modeling (SEM). This method has also been applied by other authors who have studied the effects of ERM, e.g., (Ai Ping and Muthuveloo 2015; Wisuttee Wong and Rompho 2015). SEM is a method of multivariate analysis used to test and estimate complex causal relationships among variables, even when those relationships are hypothetical or not directly observable (Williams et al. 2009). The authors selected SEM because ERM, subjective financial performance, and the proposed mediators cannot be measured directly with a simple question.

The main advantage of SEM is the more efficient evaluation of measurement and structural path models, mainly when the structural model contains multiple dependent variables and latent constructs based on proxy variables with multiple items (Astrachan et al. 2014). Compared to other statistical methods such as regression, SEM allows researchers to simultaneously assess the relationships between constructs with multiple items (latent variables) and reduces the overall error associated with the model. Another advantage over regression is the ability to conduct a path analysis for all structural relationships at once, which leads to more accurate results (Astrachan et al. 2014).

There are two basic types of SEM—covariance-based SEM (CB-SEM) and partial least squares SEM (PLS-SEM). CB-SEM is used mainly to confirm theories. To this end, it determines how well a proposed theoretical model can estimate the covariance matrix for a sample of data. In contrast, PLS-SEM is used mainly for theory development in exploratory research, as it explains the variance of the dependent variable when the model is examined (Hair et al. 2017). Although PLS-SEM is a regression method, it is nonparametric. That is, it makes no assumptions regarding the distribution of the data. PLS-SEM does not assume that the data are



normally distributed; moreover, it is appropriate to use PLS-SEM when the data are categorical or ordinal or contain a single item (Hair et al. 2017). PLS-SEM does not assume that the proxies created are identical to the constructs (latent variables) that they replace. They are explicitly recognized as proxies (Hair et al. 2017). In this exploratory study, PLS-SEM and the bootstrapping method (5,000 iterations, path weighting scheme) are used to test the significance of the relationships in the model.

Results

The structure of the sample is matched to that of the national economy to ensure the representativeness of the sample in terms of company size and sector (Table 1).

The authors use a formative measurement approach for the PLS-SEM analysis (see Appendix 2). The PLS-SEM contains the following:

- Latent variables: ERM level (ERM), subjective financial performance of the company (FP), organizational culture–mission dimension (ORGM), organizational culture–consistency dimension (ORGC), and strategic risk management performance (SRMP).
- Manifest variables: proportion of foreign capital in the company (FC), firm size (FS), and firm age (FA).

Table 2 contains basic description of the latent and manifest variables. Descriptive statistics of the latent variables were calculated from the mean scores

Table 1 Structure of the sample by number of employees (size) and sector

	Absolute frequency	Relative frequency (%)
4–49 employees	159	53.7
50–99 employees	77	26.0
100–249 employees	60	20.3
Primary	13	4.4
Secondary	88	29.7
Tertiary	173	58.4
Quaternary	22	7.4

Note: The primary sector provides raw materials and unprocessed food; it includes agriculture, forestry, fishing, hunting and mining (NACE Sections A and B). The secondary sector processes raw materials from the primary sector into goods; it includes industry, construction, handicrafts, and other nonindustrial manufacturing (NACE Sections C, D, E, F). The tertiary sector provides services, trade, and transportation; it includes transportation, marketing, attention, access, and experience (NACE Sections H, I, J, K, L, O, Q, R, S, T). The quaternary sector includes research and development, consulting, and education (NACE Sections M, P)

Source Own calculations



Table 2 Descriptive statistics of the latent and numeric manifest variables

Statistics	Number of valid observations	Mean	Standard Deviation	Minimum	Maximum
ERM	296	0.39	0.31	0	1
FP	296	3.47	0.71	1.33	5.33
ORGM	296	3.61	0.48	1	4.73
ORGC	296	3.48	0.45	1.47	4.8
SRMP	296	4.21	0.98	1.33	7
FC (%)	272	17.3	28.97	0	100
FA (years)	286	18.33	11.36	1	70

Source Own calculations

of the partial manifest variables for each enterprise because of the relatively high reliability of the constructs.

The PLS-SEM analysis follows the steps recommended by Hair et al. (2017). The final model is iteratively explored (Fig. 1).

The proposed model with proxy variables shows a high discriminant validity (HTMT) value for the relationship between ORGC and ORGM (0.977). In addition, ORGC proved to be a nonsignificant mediator at a 5% significance level. Moreover, the internal variance inflation factor (VIF) between ORGC and ORGM is high (3.544). Therefore, organizational culture–consistency dimension (ORGC) was excluded from further modeling. The next step resulted in the identification of ORGM as a full mediator in the relationship between ERM level and strategic risk management performance (Zhao et al. 2010). Figure 2 presents the final model.

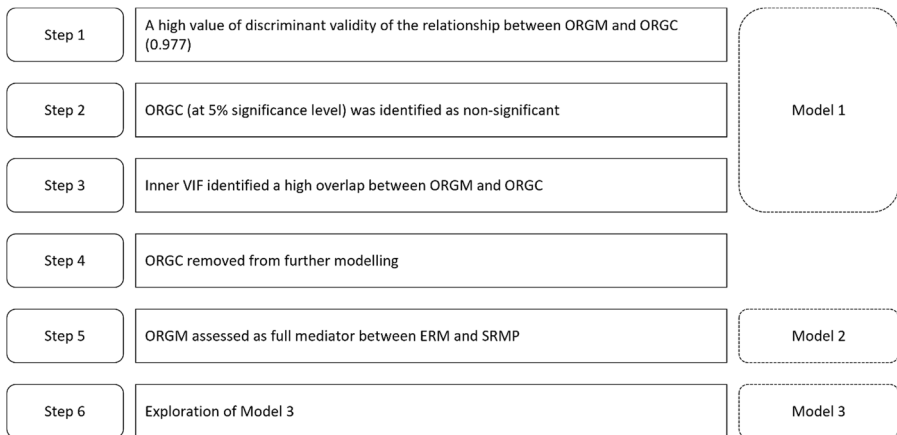


Fig. 1 Iterative exploration of the final model through PLS-SEM. Source Authors’ own elaboration



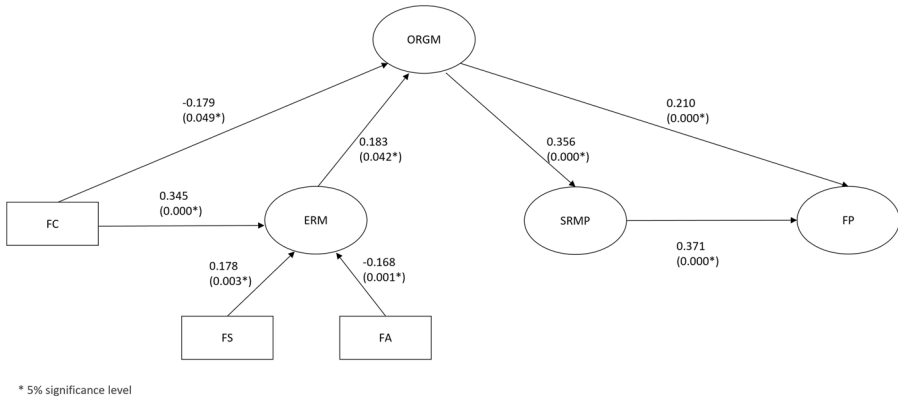


Fig. 2 Final PLS-SEM model. *Source* Own calculations

Table 3 Estimated parameters for the final model

Statistics	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P-Values
FA → ERM	- 0.168	- 0.173	0.048	3.499	0.001
ERM → ORGM	0.183	0.188	0.090	2.040	0.042
SRMP → FP	0.371	0.367	0.050	7.415	0.000
FC → ERM	0.345	0.345	0.068	5.053	0.000
FC → ORGM	- 0.179	- 0.174	0.091	1.974	0.049
ORGM → SRMP	0.356	0.369	0.044	8.068	0.000
ORGM → FP	0.210	0.220	0.058	3.610	0.000
FS → ERM	0.178	0.183	0.059	3.029	0.003

Source Own calculations

The final model satisfies the assumptions of a robust model (discriminant validity according to HTMT, collinearity, reliability). Appendix 3 presents the details.

The model results (Table 3) show that foreign capital share and firm size have a direct and positive effect on ERM level, while firm age has an inversely proportional effect on ERM level. Organizational culture–mission dimension is a significant mediator between ERM and subjective financial performance. The strategic risk management performance tracking system also plays an important role in the relationship between ERM and subjective financial performance. The standardized root mean square residual (SRMR) and the RMS theta indicate a well-fitting model (Table 4). The final model also includes the results for the indirect effects, which are discussed in the next section (Table 5).



Table 4 Model fit measures

Model Fit Measure	Saturated Model	Estimated Model
Standardized Root Mean Square Residual (SRMR)	0.08	0.08
d_ULS	4.699	4.797
d_G	0.763	0.769
Chi-Squared	1231.83	1239.822
Normed Fit Index (NFI)	0.728	0.726
RMS Theta	X	0.092

Notes: An SRMR value less than 0.10 or 0.08 (in a more conservative version; see Hu and Bentler (1999) is considered a good fit. RMS_Theta values below 0.12 indicate a well-fitting model (Henseler et al. 2014).

Source Own calculations

Table 5 Indirect effects in the final model

Specific Indirect Effects	Specific Indirect Effects
FA→ERM→ORGM→FP	- 0.006
FA→ERM→ORGM→SRMP	- 0.011
FC→ERM→ORGM→SRMP	0.022
FA→ERM→ORGM	- 0.031
ERM→ORGM→SRMP	0.065
FS→ERM→ORGM→SRMP→FP	0.004
ERM→ORGM→FP	0.038
FC→ORGM→SRMP	- 0.064
ERM→ORGM→SRMP→FP	0.024
FC→ORGM→FP	- 0.038
FC→ERM→ORGM	0.063
FC→ERM→ORGM→SRMP→FP	0.008
FS→ERM→ORGM→SRMP	0.012
ORGM→SRMP→FP	0.132
FC→ERM→ORGM→FP	0.013
FC→ORGM→SRMP→FP	- 0.024
FS→ERM→ORGM→FP	0.007
FS→ERM→ORGM	0.032
FA→ERM→ORGM→SRMP→FP	- 0.004

Source Own calculations

Discussion

This study identifies new significant variables that mediate the effect of ERM on the subjective financial performance of SMEs. The model includes the latent variables



of ERM level (Miloš Sprčić et al. 2017), strategic risk management performance (Sax and Torp 2015), organizational culture→mission dimension (Denison 1990), and subjective financial performance (Uhlener et al. 2014)→and the determinants of ERM identified in previous studies: the proportion of foreign capital in the company, firm size, and firm age.

The results show that *firm size* directly affects the level of ERM in a given firm (0.178), which supports the findings of previous studies (Nasir 2018; Jurdi and AlGhnamat 2021). As company size increases, there is a need to manage the company using formal procedures and internal guidelines. The need to manage the business increases, as does the need to manage risk formally. Small enterprises may lack the resources and reliable mechanisms needed to support their risk management activities (Brustbauer 2014). In addition, for small enterprises that do not face regulatory pressure, full ERM implementation may not be necessary because the benefits of ERM do not outweigh the associated costs.

SMEs do not necessarily benefit from adopting formal ERM methods (Hiebl et al. 2019). Because a firm's processes become more formalized as it grows, SMEs have a greater need for more efficient ERM techniques and, therefore, may be able to implement ERM because of a greater availability of resources. In addition, previous research has shown that companies that have implemented ERM perform better (Gordon et al. 2009; Grace et al. 2015), have higher value (Farrell and Gallagher 2015), and have a lower cost of capital (Berry-Stölzle and Xu 2018). Large companies' business activities and transaction types are more diverse and complex than those of smaller companies (Witek-Crabb 2014). In addition, larger companies can devote more resources and capacity to more diversified alternative investments (Golshan and Rasid 2012).

Thus, growing companies that have not implemented ERM may be missing opportunities to improve their business performance and value. From a management perspective, it would be valuable to understand why some mid-sized companies have not implemented ERM or are hesitant about implementing ERM.

A reluctance to adopt ERM and the corresponding lack of benefits relate to *firm age*. The study results show that the age of the company has an inverse influence on the level of ERM (− 0.168). Younger companies are not encumbered by history, are more flexible, and are led by managers with better theoretical knowledge of modern management methods. The historical context of the Czech Republic is characterized by the disappearance of many SMEs due to the political regime and centrally planned economy. After the political regime changed in 1990, SMEs started to form again, but with a loss of continuity in their management styles (Tarko 2020). The older a company is, the less likely it is to use advanced ERM techniques. Older companies that have operated for a longer time tend to institutionalize existing processes and adopt bureaucratic behavior, leading to barriers to strategic change (Hannan and Freeman 1984), which can also negatively affect financial performance. Thus, firm age could harm ERM implementation, a finding that contrasts with the results of a study examining the relationship between firm age and innovation in the work environment, which shows that firm age has a positive effect (Dukeov et al. 2018). An explanation for the relationship between firm age and the level of ERM implementation can also be found in Greiner's theoretical model of firm growth (Greiner 1989).



Older companies may suffer from a bureaucratic crisis in which the company spends more and more time only on internal matters, leaving no time to implement new management practices, including ERM.

Our research has also explored the positive impact of *foreign capital in SME equity* on ERM levels (0.345), which is one of the important contributions of this paper.

The global business environment and internationalization are great challenges for companies that want to expand their business activities, but they also pose a risk if those companies' business plans fail. Competition and constant changes in material costs, tax and insurance burdens, and growth in energy processes are the sources of many problems that can lead to a loss of market share and to financial losses (Hudáková and Masár 2018). However, most SMEs do not have to own a foreign subsidiary directly in order to participate in other international activities (Gubik and Bartha 2014), such as direct investments or other foreign equity investments. A study that examined the presence of foreign direct investment in SMEs found a positive relationship with SME development (Lu and Beamish 2006).

Many SMEs resist foreign investment and foreign capital. The arguments of the owners, which invoke national tradition, are not always beneficial for the company from a long-term strategic point of view and often express a hidden fear for their own career and the fear of losing control over their company. This is confirmed by the research findings of this paper: the share of foreign capital positively impacts the level of ERM (0.345). The inflow of foreign capital means a strengthening of capital and more control, which can be exploited precisely through ERM. Foreign investors can result in faster adoption of international standards such as ISO. However, the adoption rate does not depend on the amount of foreign investment but on the investor (Prakash and Potoski 2007). The Czech Republic receives investments mainly from Western European countries, where the ERM approach may be more widespread. Another argument supporting the positive impact of foreign capital on the level of ERM is the ability to adequately manage the increased risks associated with receiving foreign capital. A study conducted with a sample of African financial institutions supports the authors' research findings. The results show that the presence of foreign capital significantly affects ERM implementation (Matovu 2017).

Implementing ERM alone does not result in improved business performance or other benefits. The implementation of formal ERM practices and processes must be supported by general agreements among employees and management. *Organizational culture* is a catalyst for the ERM approach. Our study also examines the ability of strategic risk management to connect all levels of management.

The PLS-SEM results support *H1: Organizational culture (mission dimension) mediates the relationship between ERM and the subjective financial performance of SMEs*. However, the proportion of foreign equity has an adverse effect on the organizational culture – mission dimension (– 0.179). This negative effect could be caused by different understandings of the mission from the investors' point of view. With the fragmentation of investors, there may be fewer common goals in a given company. This negative impact may even affect firm performance (Foreign capital → Organizational culture – mission → Financial performance: indirect effect = – 0.038; Table 5). However, when a firm uses the ERM approach, the overall indirect



effect of the proportion of foreign equity on the subjective financial performance of the firm is positive in the presence of the mediating variable ERM (Foreign capital→ERM level→Organizational culture–mission→Financial performance: indirect effect=0.013; Table 5). Thus, the level of ERM as a mediating variable can transform the negative effect of foreign equity on financial performance into a positive effect through the organizational culture (mission dimension). This result demonstrates the central role of ERM in organizations, which is consistent with previous studies (e.g., Baxter et al. 2013; Hoyt and Liebenberg 2011; Laisasikorn and Rompho 2014).

The results clearly show the inevitable and crucial role of ERM when companies decide to expand abroad or allow foreign investors. The ERM approach mitigates the negative impact of foreign capital on the consistency of organizational culture (mission dimension) and supports the financial performance of the company at the same time. According to previous studies, organizational culture itself positively affects firm performance (Han 2012; Tadevosyanová 2015; Bhuiyan et al. 2020). However, previous studies have not established a link between organizational culture, ERM and the business performance of SMEs.

The PLS-SEM results do not support H2; the variable organizational culture (consistency dimension) was removed from the model due to the high value of discriminant validity with organizational culture (mission dimension) and the concurrent insignificance of the relationship at the 5% significance level.

The results of the PLS-SEM analysis do not support Hypothesis H3: strategic risk management performance mediates the relationship between ERM and the subjective financial performance of SMEs. The ERM approach should be present at all management levels within the organization and should also positively influence the performance of strategic risk management. The relationship is indirect and is mediated through organizational culture (mission dimension). The mission dimension of organizational culture is strategic and positively supports the strategic risk management performance (0.356). However, the ERM approach should include strategic, operational, and control perspectives (Dvorski Lacković et al. 2022); moreover, COSO (2017) also includes the components of “strategy and objective-setting” and “performance”. The results may have been obtained because a relatively large proportion of companies (approximately 30%) use a version of ERM called “pretend ERM”, where the SMEs have formally implemented an ERM approach, but the risk management system lacks the strategic and operational components of an ERM system and focuses only on the reporting aspect (Dvorski Lacković et al. 2022; Syrová and Špička 2022a).

Conclusion and implications

Regarding the theoretical implications, this study reveals new mediators between ERM and the subjective financial performance of SMEs. The PLS-SEM method is suitable for analyzing complex relationships and testing causal relationships. Exploring indirect pathways can reveal consequential effects and help managers and owners understand various relationships. Complicated ERM indices (e.g., Gordon



et al. 2009) are not suitable for the nonfinancial sector because the input variables for calculating such indices are difficult or impossible to obtain. The model works with the direct and indirect effects of ERM implementation. The indirect effects show the crucial role of organizational culture (mission dimension) and evaluations of strategic risk management performance in the relationship between ERM and the subjective financial performance of SMEs.

From the management perspective, it is essential to establish functional and integrated processes for ERM implementation. ERM must be integrated with the organizational culture and the performance monitoring systems in the SME. Managers and owners should emphasize the functional implementation of ERM, not just a pretend ERM (Syrová and Špička 2022a) that lacks all the elements of an ERM approach. The ERM system must not be a “facade without the substance” that does not contribute to better planning and decision-making processes (Dvorski Lacković et al. 2022).

This research provides new information about the role of foreign capital in non-financial SMEs—it is a determinant that has a positive impact on ERM implementation. The share of foreign capital results in an inflow of new management practices and process innovations and the transfer of international management techniques. At the same time, the contribution of foreign capital leads to a greater need for corporate control and integrated management of the risks associated with foreign investors or other foreign activities. Managers and owners need to monitor the impact of foreign capital on the company’s internal organization and organizational culture and subsequent changes. The share of foreign capital in equity can harm a company’s internal environment, which is consistent with the results of our research.

When deciding to use foreign capital for business development, it is important to control for the associated external risks (investment, credit, interest rate, and market risks) and for internal consistency and risks arising from the inclusion of other types of capital. The effect of foreign capital puts managers and owners in a difficult position. It is essential to focus on the internal consistency of the company, proper communication within the company, and the maintenance of consistency in the direction and vision of the company. It is recommended that ERM be implemented in nonfinancial SMEs because the level of ERM can transform the negative effect of foreign equity on financial performance into a positive effect through organizational culture (mission dimension). Thus, the study reveals that ERM plays a positive mediating role for SMEs.

The research findings provide new information on the level and impact of ERM in the Visegrad Four country. The findings on the use of foreign capital, facilitating the implementation of ERM even at the expense of deterioration of organizational culture—the mission dimension, is new information for owners/managers in SMEs. It is foreign capital that is one of the problem areas in post-communist countries. There is an area for further research outside of Central Europe to compare the role of foreign capital in SMEs. Further opportunities for research were identified by the authors in the area of Organizational Culture and its other dimensions, which were not examined in the study. The mediating variables were selected based on the literature review, but there are still a number of variables that need to be analyzed in more detail in the SME environment. Investigating the differences between family and non-family businesses in



SME ERM could also provide interesting results, with the possibility of building on the findings by Glowka et al. (2020).

Another opportunity is to conduct qualitative research to identify the reasons that reflect the relatively high percentage of low levels of ERM implementation in SMEs. Quantitative research has shown that ERM has a positive impact on the subjective financial performance of the company. The authors see the biggest challenge in finding out why SMEs have a relatively low adoption of ERM approaches.

One limitation of this study could be the study sample, which focuses only on the Czech Republic. However, this study could be interesting for other Central European countries that have experienced similar historical events in the second half of the twentieth century. Another limitation of this research could be the subjective evaluation of the variables. However, to minimize the effects of this limitation, the authors conducted pilot tests and used validated constructs. Objective assessments of the variables within SMEs may not be feasible given the low level of disclosure related to ERM among SMEs.

Appendix 1: Description of the manifest variables

ERM	ERM_1: Is there a chief risk officer in your company, responsible for risk management?
1 – Yes	ERM_2: Is there a special department in your company dedicated to risk management?
0 – No	ERM_3: Does your company have a written statement of the firm's risk appetite?
	ERM_4: Are there official risk management policies and procedures in your company?
	ERM_5: Do you apply the COSO integrated framework for ERM in your company?
	ERM_6: Do you apply the ISO 31000 risk management standard in your company?
	ERM_7: Is risk managed with an integrated analysis and management of all identified corporate risks (e.g., financial, strategic, operational, compliance, and reporting risks)?
	ERM_8: Do you determine correlations and portfolio risk effects of combined risks?
	ERM_9: Do you determine quantitative impacts risks may have on key performance indicators?
	ERM_10: Do you organize workshops in your company where managers discuss exposures to different types of risks and risk management?
	ERM_11: Does your company create a risk map indicating position of risks the company is exposed to, considering probability of occurrence and significance of identified risk to the business activity?
	ERM_12: Do you have a risk response plan for all significant events?
	ERM_13: Do you submit a formal report on risk and risk management to the management board at least annually?
	ERM_14: Do you monitor key risk indicators aimed at emerging risks (not past performance)?

Authors: (Miloš Sprčić et al., 2017).

ORGC	ORGC_1: Our approach to doing business is very consistent and predictable
1 – Strongly disagree	ORGC_2: There is good alignment of goals across levels of this organization
2 – Disagree	ORGC_3: People from different organizational units still share a common perspective



3—Neutral	ORGC_4: It is easy to coordinate projects across functional units in this organization
4—Agree	ORGC_5: Working with someone from another part of this organization is like working with someone from a different company
5 – Strongly Agree	ORGC_6: When disagreements occur, we work hard to achieve “win-win” solutions
	ORGC_7: This organization has a strong culture
	ORGC_8: There is clear agreement about the right way and the wrong way to do things in this organization
	ORGC_9: It is easy for us to reach consensus, even on difficult issues
	ORGC_10: We often have trouble reaching agreement on key issues
	ORGC_11: There is a clear and consistent set of values in this company that governs the way we do business
	ORGC_12: This company has a characteristic management style and a distinct set of management practices
	ORGC_13: The managers in this company “practice what they preach.”
	ORGC_14: This organization has an ethical code that guides our behavior and tells us right from wrong
	ORGC_15: Ignoring the core values of this organization will get you in trouble
ORGM	ORGM_1: This organization has a clear mission that gives meaning and direction to our work
1 – Strongly disagree	ORGM_2: This organization has a long-term purpose and direction
2—Disagree	ORGM_3: The strategic direction of this organization is unclear to me
3—Neutral	ORGM_4: This organization has a clear strategy for the future
4—Agree	ORGM_5: Our organization’s strategy is leading other firms to change the ways that they compete
5 – Strongly Agree	ORGM_6: There is widespread agreement about the goals of this organization
	ORGM_7: The leaders of this organization set goals that are ambitious, but realistic
	ORGM_8: The leadership of this organization has “gone on record” about the objectives we are trying to meet
	ORGM_9: We continuously track our progress against our stated goals
	ORGM_10: The people in this organization understand what needs to be done for us to succeed in the long run
	ORGM_11: We have a shared vision of what this organization will be like in the future
	ORGM_12: The leaders in this organization have a long-term orientation
	ORGM_13: Short-term thinking often compromises long-term vision
	ORGM_14: Our vision creates excitement and motivation for our employees
	ORGM_15: We are able to meet short-term demand without compromising our long-term vision

Retrieved from (Denison, 1990).

SRMP	SRMP_1: Ability to hedge important known risks and uncertainties
1 – Significantly worse	SRMP_2: Ability to react to and reduce unforeseen risks
2 – Worse	SRMP_3: Ability to exploit new opportunities
3 – Slightly worse	



-
- 4 – Approximately the same
 - 5 – Slightly better
 - 6 – Better
 - 7 – Significantly better
-

Retrieved from (Sax and Torp, 2015).

FP

FP_1: Firm's financial performance compared to competitors

- 1 – Much worse
- 2 – Worse
- 3 – Approximately the same
- 4 – Better
- 5 – Much better

FP_2: Profitability in the last fiscal year

- 1 – Extremely unprofitable
- 2 – Unprofitable
- 3 – Slightly unprofitable
- 4 – Approximately the same
- 5 – Slightly profitable
- 6 – Profitable
- 7 – Extremely profitable

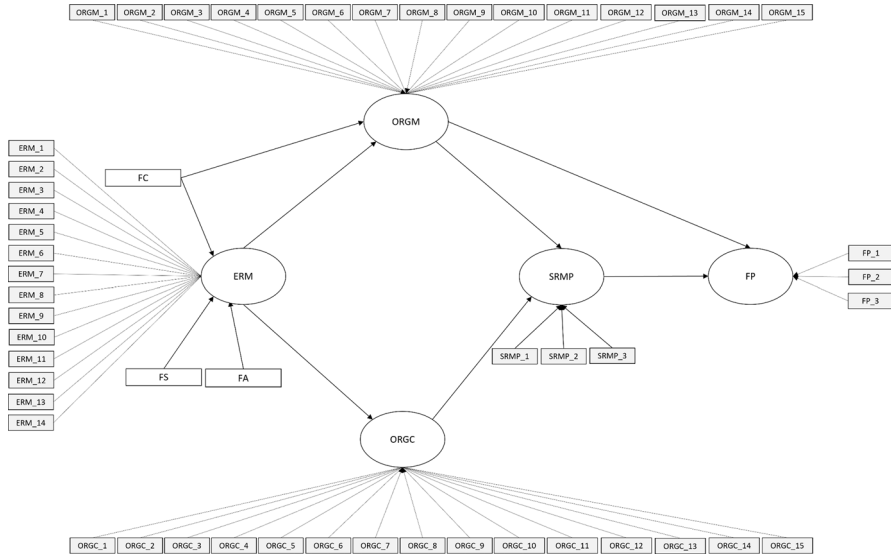
FP_3: Current liquidity

- 1 – Very little liquidity
 - 2 – Little liquidity
 - 3 – Medium liquidity
 - 4 – Significant liquidity
-

Retrieved from (Uhlauer et al. 2014).



Appendix 2: Initial model including all manifest variables



Appendix 3: Discriminant validity, reliability and inner VIF of the final model

Discriminant validity (HTMT ratio)	FA	ERM	SRMP	FP	FC	ORMG	FS
FA							
ERM	0.19						
SRMP	0.086	0.096					
FP	0.087	0.159	0.548				
FC	0.059	0.438	0.07	0.087			
ORMG	0.135	0.265	0.399	0.427	0.169		
FS	0.038	0.329	0.061	0.077	0.432	0.135	

Source own calculation

Reliability	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
FA	1.000	1.000	1.000	1.000
ERM	0.898	0.906	0.913	0.431
SRMP	0.845	0.849	0.906	0.763



Reliability	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
FP	0.646	0.723	0.799	0.579
FC	1.000	1.000	1.000	1.000
ORGM	0.869	0.900	0.893	0.381
FS	1.000	1.000	1.000	1.000

Source own calculation

Inner VIF	FA	ERM	SRMP	FP	FC	ORGM	FS
FA		1.008					
ERM						1.229	
SRMP				1.145			
FP							
FC		1.238				1.229	
ORGM			1	1.145			
FS		1.236					

Source own calculation

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Data availability Data were collected by the private company Ipsos (<https://www.ipsos.com/cs-cz>) and is not publicly available.

Declarations

Conflict of interest The authors have no relevant financial or non-financial interests to disclose.

References

- Abbasi, T., and H. Weigand. 2017. The Impact of Digital Financial Services on Firm's Performance: A Literature Review. *Papers* 1705 (10294): 1–15.
- Abor, J. 2010. Foreign direct investment and firm productivity: Evidence from firm-level data. *Global Business and Economics Review* 12 (4): 267–285. <https://doi.org/10.1504/GBER.2010.036055>.
- Adomako, S., K. Frimpong, J. Amankwah-Amoah, F. Donbesuur, and R.A. Opoku. 2021. Strategic Decision Speed and International Performance: The Roles of Competitive Intensity, Resource Flexibility, and Structural Organicity. *Management International Review* 61 (1): 27–55. <https://doi.org/10.1007/s11575-021-00439-w>.



- Ai Ping, T., and R. Muthueloo. 2015. The impact of enterprise risk management on firm performance: Evidence from Malaysia. *Asian Social Science* 11 (22): 149–159. <https://doi.org/10.5539/ass.v11n22p149>.
- Ai Ping, T., K. Yeang Lee, and R. Muthueloo. 2017. The Impact of Enterprise Risk Management, Strategic Agility, and Quality of Internal Audit Function on Firm Performance. *International Review of Management and Marketing* 7 (1): 222–229.
- Astrachan, C.B., V.K. Patel, and G. Wanzanried. 2014. A comparative study of CB-SEM and PLS-SEM for theory development in family firm research. *Journal of Family Business Strategy* 5 (1): 116–128. <https://doi.org/10.1016/j.jfbs.2013.12.002>.
- Aven, T. 2017. The flaws of the ISO 31000 conceptualisation of risk. *Proceedings of the Institution of Mechanical Engineers, Part O: Journal of Risk and Reliability* 231 (5): 467–468. <https://doi.org/10.1177/1748006X17690672>.
- Baxter, R., J.C. Bedard, R. Hoitash, and A. Yezegel. 2013. Enterprise Risk Management Program Quality: Determinants, Value Relevance, and the Financial Crisis. *Contemporary Accounting Research* 30 (4): 1264–1295. <https://doi.org/10.1111/j.1911-3846.2012.01194.x>.
- Beasley, M., B. Branson, and D. Pagach. 2015. An analysis of the maturity and strategic impact of investments in ERM. *Journal of Accounting and Public Policy* 34 (3): 219–243. <https://doi.org/10.1016/j.jaccpubpol.2015.01.001>.
- Berry-Stözl, T.R., and J. Xu. 2018. Enterprise Risk Management and the Cost of Capital. *Journal of Risk and Insurance* 85 (1): 159–201. <https://doi.org/10.1111/jori.12152>.
- Bhuiyan, F., K. Baird, and R. Munir. 2020. The association between organisational culture, CSR practices and organisational performance in an emerging economy. *Meditari Accountancy Research* 28 (6): 977–1011. <https://doi.org/10.1108/MEDAR-09-2019-0574>.
- Brustbauer, J. 2014. Enterprise risk management in SMEs: Towards a structural model. *International Small Business Journal: Researching Entrepreneurship* 34 (1): 70–85. <https://doi.org/10.1177/0266242614542853>.
- Bui, D.G., Y. Fang, and C.-Y. Lin. 2018. The influence of risk culture on firm returns in times of crisis. *International Review of Economics & Finance* 57: 291–306. <https://doi.org/10.1016/j.iref.2018.01.015>.
- Bures, M. 2017. What share of GDP do small and medium-sized enterprises account for? Are they really that important? *Finance.cz*.
- Callahan, C., and J. Soileau. 2017. Does Enterprise risk management enhance operating performance? *Advances in Accounting* 37 (June): 122–139. <https://doi.org/10.1016/j.adiac.2017.01.001>.
- Cameron, K. S., and R. E. Quinn. 2011. *Diagnosing and Changing Organizational Culture: Based on the Competing Values Framework*Wiley.
- Chakraborty, I., and P. Maity. 2020. COVID-19 outbreak: Migration, effects on society, global environment and prevention. *Science of the Total Environment* 728: 138882. <https://doi.org/10.1016/j.scitotenv.2020.138882>.
- COSO-ERM. 2017. Enterprise Risk Management Integrating with Strategy and Performance. *Committee of Sponsoring Organizations of the Treadway Commission*.
- COSO. 2019. Welcome to COSO. Committe Spons. Organ. Treadw. Comm.
- Darmastuti, D., R. Sugiarti, and A. Maulana. 2020. ERM sophistication, asymmetric information and audit quality. *International Journal of Innovation, Creativity and Change* 10 (11): 368–391.
- Denison, D. 1990. *Corporate Culture and Organizational Effectiveness*Wiley.
- Denison, D.R., and A.K. Mishra. 1995. Toward a Theory of Organizational Culture and Effectiveness. *Organization Science* 6 (2): 204–223. <https://doi.org/10.1287/orsc.6.2.204>.
- Dukeov, I., J. P. Bergman, P. Heilmann, V. Platonov, and V. Jaschenko. 2018. How do a firm's age and size affect its organizational innovation? *Journal of Innovation Management*, 6(3):98–133. https://doi.org/10.24840/2183-0606_006-003_0005.
- Dvorski Lacković, I., N. Kurnoga, and D. Miloš Sprčić. 2022. Three-factor model of Enterprise Risk Management implementation: Exploratory study of non-financial companies. *Risk Management* 24: 101–122. <https://doi.org/10.1057/S41283-021-00086-3>.
- Farrell, M., and R. Gallagher. 2015. The Valuation Implications of Enterprise Risk Management Maturity. *Journal of Risk and Insurance* 82 (3): 625–657. <https://doi.org/10.1111/jori.12035>.
- Farrell, M., and R. Gallagher. 2019. Moderating influences on the ERM maturity-performance relationship. *Research in International Business and Finance* 47 (January): 616–628. <https://doi.org/10.1016/j.ribaf.2018.10.005>.



- Florio, C., and G. Leoni. 2017. Enterprise risk management and firm performance: The Italian case. *British Accounting Review* 49 (1): 56–74. <https://doi.org/10.1016/j.bar.2016.08.003>.
- Gatzert, N., and M. Martin. 2015. Determinants and value of enterprise risk management: Empirical evidence from the literature. *Risk Management and Insurance Review* 18 (1): 29–53. <https://doi.org/10.1111/rmir.12028>.
- Gengatharan, R., E.S. Al Harthi, and S.S. Ekhlass Said. 2020. Effect of Firm Size on Risk and Return: Evidences from Sultanate of Oman. *European Journal of Business and Management*. <https://doi.org/10.7176/ejbm/12-9-08>.
- Gertler, M., and S. Gilchrist. 2018. What Happened: Financial Factors in the Great Recession. *Journal of Economic Perspectives* 32 (3): 3–30. <https://doi.org/10.1257/JEP.32.3.3>.
- Glowka, G., A. Kallmünzer, and A. Zehrer. 2020. Enterprise risk management in small and medium family enterprises: The role of family involvement and CEO tenure. *International Entrepreneurship and Management Journal*. <https://doi.org/10.1007/s11365-020-00682-x>.
- Golshan, N.M., and S.Z.A. Rasid. 2012. Determinants of enterprise risk management adoption: An empirical analysis of Malaysian public listed firms. *World Academy of Science, Engineering and Technology* 62: 453–460.
- Gordon, G.G. 1991. Industry Determinants of Organizational Culture. *Academy of Management Review* 16 (2): 396–415. <https://doi.org/10.5465/amr.1991.4278959>.
- Gordon, L.A., M.P. Loeb, and C.Y. Tseng. 2009. Enterprise risk management and firm performance: A contingency perspective. *Journal of Accounting and Public Policy* 28 (4): 301–327. <https://doi.org/10.1016/j.jaccpubpol.2009.06.006>.
- Grace, M.F., J.T. Leverty, R.D. Phillips, and P. Shimpi. 2015. The value of investing in enterprise risk management. *Journal of Risk and Insurance* 82 (2): 289–316. <https://doi.org/10.1111/jori.12022>.
- Greiner, L. E. 1989. Evolution and Revolution as Organizations Grow; Pp. 373–387. In *Readings in Strategic Management*. Macmillan Education UK, London https://doi.org/10.1007/978-1-349-20317-8_25.
- Grondys, K., O. Ślusarczyk, H.I. Hussain, and A. Androniceanu. 2021. Risk Assessment of the SME Sector Operations during the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health* 18 (8): 4183. <https://doi.org/10.3390/ijerph18084183>.
- Gubik, A. S., and Z. Bartha. 2014. SME Internalisation Index (SMINI) Based on the Sample of the Visegrad Countries. *International Entrepreneurship and Corporate Growth in Visegrad Countries*, (July):23–40.
- Hair, J. F., T. M. Hult, C. M. Ringle, and M. Sarstedt. 2017. *Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. SAGE Publishing.
- Han, H. 2012. The Relationship among Corporate Culture, Strategic Orientation, and Financial Performance. *Cornell Hospitality Quarterly* 53 (3): 207–219. <https://doi.org/10.1177/1938965512443505>.
- Hanggraeni, D., B. Ślusarczyk, L.A.K. Sulung, and A. Subroto. 2019. The Impact of Internal, External and Enterprise Risk Management on the Performance of Micro Small and Medium Enterprises. *Sustainability* 11 (7): 2172. <https://doi.org/10.3390/su11072172>.
- Hannan, M.T., and J. Freeman. 1984. Structural Inertia and Organizational Change. *American Sociological Review* 49 (2): 149. <https://doi.org/10.2307/2095567>.
- Hatcher, L. 2013. *Advanced Statistics in Research: Reading, Understanding, and Writing Up Data Analysis Results*. Lightning Source Inc.
- Henseler, J., T.K. Dijkstra, M. Sarstedt, C.M. Ringle, A. Diamantopoulos, D.W. Straub, D.J. Ketchen, J.F. Hair, G.T.M. Hult, and R.J. Calantone. 2014. Common Beliefs and Reality About PLS. *Organizational Research Methods* 17 (2): 182–209. <https://doi.org/10.1177/1094428114526928>.
- Heong, Y.K.A., and Y.S. Teng. 2018. COSO Enterprise Risk Management: Small-Medium Enterprise Evidence. *Asia-Pacific Management Accounting Journal* 13 (2): 83–111.
- Hiebl, M.R.W., C. Duller, and H. Neubauer. 2019. Enterprise risk management in family firms: Evidence from Austria and Germany. *Journal of Risk Finance* 20 (1): 39–58. <https://doi.org/10.1108/JRF-01-2018-0003>.
- Hoyt, R.E., and A.P. Liebenberg. 2011. The Value of Enterprise Risk Management. *Journal of Risk and Insurance* 78 (4): 795–822. <https://doi.org/10.1111/j.1539-6975.2011.01413.x>.
- Hu, L., and P.M. Bentler. 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal* 6 (1): 1–55. <https://doi.org/10.1080/10705519909540118>.



- Hudáková, M., and M. Masár. 2018. The Assessment of Key Business Risks for SMEs in Slovakia and Their Comparison with other EU Countries. *Entrepreneurial Business and Economics Review*, 6(4):145–160. <https://doi.org/10.15678/EBER.2018.060408>.
- Husainia, S., J. Saputra, and W. Albra. 2019. A study of supply chain management of board composition, enterprise risk management, and performance of non and Islamic companies in Indonesia. *International Journal of Supply Chain Management* 8 (5): 349–357.
- Jenny, F. 2020. Economic Resilience, Globalization and Market Governance: Facing the COVID-19 Test. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3563076>.
- Jenya, B., and M. Sandada. 2017. Enhancing Success of SMES Through Risk Enterprise Management: Evidence From A Developing Country. *Pakistan Journal of Applied Economics*, 27(2).
- Jurdi, D.J., and S.M. AIGHnaimat. 2021. The Effects of ERM Adoption on European Insurance Firms Performance and Risks. *Journal of Risk and Financial Management* 14 (11): 554. <https://doi.org/10.3390/jrfm14110554>.
- Kamboj, S., and Z. Rahman. 2015. Marketing capabilities and firm performance: Literature review and future research agenda. *International Journal of Productivity and Performance Management* 64 (8): 1041–1067. <https://doi.org/10.1108/IJPPM-08-2014-0117>.
- Klučka, J., and R. Grünbichler. 2020. Enterprise Risk Management – Approaches Determining Its Application and Relation to Business Performance. *Quality Innovation Prosperity*, 24(2):51, <https://doi.org/10.12776/qip.v24i2.1467>.
- Kommunuri, J., A. Narayan, M. Wheaton, L. Jandug, and S. Gonuguntla. 2016. Firm performance and value effects of enterprise risk management. *New Zealand Journal of Applied Business Research* 14 (2): 17–28.
- Kumar, P., J. Maiti, and A. Gunasekaran. 2018. Impact of quality management systems on firm performance. *International Journal of Quality & Reliability Management* 35 (5): 1034–1059. <https://doi.org/10.1108/IJQRM-02-2017-0030>.
- Kurdi, I. A., A. F. Naji, and A. N. Naseef. 2019. Enterprise risk management and performance of financial institutions in Iraq: The mediating effect of information technology quality. *Journal of Information Technology Management*, 11(4):80–91, <https://doi.org/10.22059/JITM.2019.74764>.
- Laisasikorn, K., and N. Rompho. 2014. A study of the relationship between a successful enterprise risk management system, a performance measurement system and the financial performance of Thai listed companies. *The Journal of Applied Business and Economics* 16 (2): 81.
- Lu, J.W., and P.W. Beamish. 2006. SME internationalization and performance: Growth vs. profitability. *Journal of International Entrepreneurship* 4 (1): 27–48. <https://doi.org/10.1007/s10843-006-8000-7>.
- Lundqvist, S.A. 2014. An Exploratory Study of Enterprise Risk Management. *Journal of Accounting, Auditing & Finance* 29 (3): 393–429. <https://doi.org/10.1177/0148558X14535780>.
- Lundqvist, S.A. 2015. Why firms implement risk governance - Stepping beyond traditional risk management to enterprise risk management. *Journal of Accounting and Public Policy* 34 (5): 441–466. <https://doi.org/10.1016/j.jaccpubpol.2015.05.002>.
- Malik, M.F., M. Zaman, and S. Buckby. 2020. Enterprise risk management and firm performance: Role of the risk committee. *Journal of Contemporary Accounting and Economics* 16 (1): 100178. <https://doi.org/10.1016/j.jcae.2019.100178>.
- Marc, M., D. Miloš Sprčić, and M. Mešin Žagar. 2018. Is enterprise risk management a value added activity? *E+M Ekonomie a Management*, 21(1):68–84, <https://doi.org/10.15240/tul/001/2018-1-005>.
- Mardessi, S.M., and S.D. Ben Arab. 2018. Determinants of ERM implementation: The case of Tunisian companies. *Journal of Financial Reporting and Accounting* 16 (3): 443–463. <https://doi.org/10.1108/JFRA-05-2017-0044>.
- Matovu, S. 2017. *The influence of the external environment on the design of Management Accounting Systems and Enterprise Risk Management*. Master Thesis.
- Meulbroek, L.K. 2002. A Senior Manager's Guide To Integrated Risk Management. *Journal of Applied Corporate Finance* 14 (4): 56–70. <https://doi.org/10.1111/j.1745-6622.2002.tb00449.x>.
- Miloš Sprčić, D., A. Kožul, and E. Pecina. 2017. Managers' Support – A Key Driver behind Enterprise Risk Management Maturity. *Zagreb International Review of Economics and Business* 20 (s1): 25–39. <https://doi.org/10.1515/zireb-2017-0003>.
- Moeller, R. R. 2007. COSO enterprise risk management : understanding the new integrated ERM framework. 367. Wiley.
- Nasir, N. 2018. Effect of Enterprise Risk Management on Firm Value: Empirical Evidence from Non-Financial Firms in Pakistan. *International Journal of Financial Management* 8 (4): 15–28.



- Ogutu, J., M. Bennett, and R. Olawoyin. 2018. Closing the Gap: Between Traditional and Enterprise Risk Management Systems. *Professional Safety* 63 (04): 42–47.
- Osman, A., and C.C. Lew. 2020. Developing a framework of institutional risk culture for strategic decision-making. *Journal of Risk Research* 24 (9): 1072–1085. <https://doi.org/10.1080/13669877.2020.1801806>.
- Pagach, D., and M. Wiczorek-Kosmala. 2020. The Challenges and Opportunities for ERM Post-COVID-19: Agendas for Future Research. *Journal of Risk and Financial Management* 13 (12): 323. <https://doi.org/10.3390/jrfm13120323>.
- Prakash, A., and M. Potoski. 2007. Investing Up: FDI and the Cross-Country Diffusion of ISO 14001 Management Systems. *International Studies Quarterly* 51 (3): 723–744. <https://doi.org/10.1111/j.1468-2478.2007.00471.x>.
- Quon, T.K., D. Zéghal, and M. Maingot. 2012. Enterprise risk management and business performance during the financial and economic crises. *Problems and Perspectives in Management* 10 (3): 95–103.
- Rathore, U., and S. Khanna. 2020. From Slowdown to Lockdown: Effects of the COVID-19 Crisis on Small Firms in India. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3615339>.
- Rehman, A.U., and M. Anwar. 2019. Mediating role of enterprise risk management practices between business strategy and SME performance. *Small Enterprise Research* 26 (2): 207–227. <https://doi.org/10.1080/13215906.2019.1624385>.
- Sax, J., and S. Torp. 2015. Speak up! enhancing risk performance with enterprise risk management, leadership style and employee voice. *Management Decision* 53 (7): 1452–1468. <https://doi.org/10.1108/MD-10-2014-0625>.
- Sax, J., and T.J. Andersen. 2019. Making Risk Management Strategic: Integrating Enterprise Risk Management with Strategic Planning. *European Management Review* 16 (3): 719–740. <https://doi.org/10.1111/emre.12185>.
- Scott, A., and A. Balthrop. 2021. The consequences of self-reporting biases: Evidence from the crash preventability program. *Journal of Operations Management* 67 (5): 588–609. <https://doi.org/10.1002/joom.1149>.
- Schiller, F., and G. Prpich. 2014. Learning to organise risk management in organisations: What future for enterprise risk management? *Journal of Risk Research* 17 (8): 999–1017. <https://doi.org/10.1080/13669877.2013.841725>.
- Silva, J.R., A.F. da Silva, and B.L. Chan. 2019. Enterprise Risk Management and Firm Value: Evidence from Brazil. *Emerging Markets Finance and Trade* 55 (3): 687–703. <https://doi.org/10.1080/1540496X.2018.1460723>.
- Statista. 2021. Europe: number of SMEs. Statista.
- Syrová, L., and J. Špička. 2022a. The Impact of Foreign Capital on the Level of ERM Implementation in Czech SMEs. *Journal of Risk and Financial Management* 15 (2): 83. <https://doi.org/10.3390/JRFM15020083>.
- Syrová, L., and J. Špička. 2022b. Which factors moderate and mediate the relationship between enterprise risk management and firm performance A meta-analysis and conceptual study. *European J. of International Management* 1 (1): 1. <https://doi.org/10.1504/ejim.2022.10044223>.
- Tadevosyanová, L.Š. 2015. Organizational Culture in the Czech Republic and its impact on value creation. *Ekonomika a Management* 2015 (3): 1–16.
- Tarko, V. 2020. Understanding post-communist transitions: The relevance of Austrian economics. *Review of Austrian Economics* 33 (1–2): 163–186. <https://doi.org/10.1007/s11138-019-00452-1>.
- Thomya, W., and K. Saenchaiyathon. 2015. The effects of organizational culture and enterprise risk management on organizational performance: A conceptual framework. *International Business Management* 9 (2): 158–163. <https://doi.org/10.3923/ibm.2015.158.163>.
- Uhlaner, L., L. M. Uhlaner, R. H. Floren, and J. R. Geerlings. Forthcoming. Owner commitment and relational governance in the privately-held firm: An empirical study. <https://doi.org/10.1007/s11187-006-9009-y>.
- Virglerova, Z. 2019. Differences in the Concept of Risk Management in V4 Countries. *International Journal of Entrepreneurial Knowledge* 6 (2): 100–109. <https://doi.org/10.2478/ijek-2018-0017>.
- Williams, L.J., R.J. Vandenberg, and J.R. Edwards. 2009. Structural Equation Modeling in Management Research: A Guide for Improved Analysis. *The Academy of Management Annals* 3 (1): 543–604. <https://doi.org/10.1080/19416520903065683>.
- Wirahadi, A., and M. Pasaribu. 2022. Business Model Innovation: The Role of Enterprise Risk Management and Strategic Agility. 283–289, <https://doi.org/10.2991/AEBMR.K.220304.037>.



- Witek-Crabb, A. 2014. Business Growth Versus Organizational Development Reflected in Strategic Management of Polish Small, Medium and Large Enterprises. *Procedia - Social and Behavioral Sciences* 150: 66–76. <https://doi.org/10.1016/J.SBSPRO.2014.09.008>.
- Yakob, S., H.-S. B.A.M, R. Yakob, and N. Raziff. 2019. The Effect of Enterprise Risk Management Practice on SME Performance. *The South East Asian Journal of Management*, 13(2):151–169, <https://doi.org/10.21002/seam.v13i2.11785>.
- Yang, S., M. Ishtiaq, and M. Anwar. 2018. Enterprise Risk Management Practices and Firm Performance, the Mediating Role of Competitive Advantage and the Moderating Role of Financial Literacy. *Journal of Risk and Financial Management* 11 (3): 35. <https://doi.org/10.3390/jrfm11030035>.
- Yazici, H.J. 2011. Significance of organizational culture in perceived project and business performance. *EMJ - Engineering Management Journal* 23 (2): 20–29. <https://doi.org/10.1080/10429247.2011.11431892>.
- Zhao, X., J.G. Lynch, and Q. Chen. 2010. Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research* 37 (2): 197–206. <https://doi.org/10.1086/651257>.

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