

## OPINIONS OF OWNERS AND MANAGERS ON THE BUSINESS RISKS OF SMES SUSTAINABILITY: DOES GENDER MATTER?

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**Abstract.** The aim of the article is the quantification of the effect size of business risks in the context of small and medium-sized enterprises' (SMEs) sustainability according to gender. Data collection was carried out in the period 12/2022–01/2023 using the CAWI methodology. 1,090 owners and managers from the business environment of the SME segment participated in the research in the Visegrad group countries. Structural equation modelling (SEM) was implemented on the evaluation of the hypotheses of research. The statistical software IBM SPSS Statistics and AMOS vs. 28 were used in the data analytics. The management of business risks, just like market, financial and personnel risks, has a strong positive impact on the sustainable development of SMEs. Personnel risk management is the most important determinant which has a strong positive impact on the sustainable development of SMEs with male entrepreneurs. Financial risk management has a medium positive effect on the sustainable development of SMEs for female entrepreneurs. The research findings illustrate the important role for key individuals in national development and for strategic documents dealing with how to help the SME segment.

**Keywords:** business risk, case study, gender, effect, SMEs, sustainable development, Visegrad group countries.

**JEL Classification:** L21, L26, M21, C36.

### Introduction

The sector of small and medium-sized enterprises plays a key role in national economies. This is the largest group of business entities, which has a significant impact on the creation

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of GDP and the employment of personnel (Smith et al., 2022; Journeault et al., 2021). The considerations in the article concern the Visegrad Group ('Visegrad Four', V4), an example of regional cooperation between the countries of Central Europe: Poland, the Czech Republic, the Slovak Republic and Hungary. Separating this group of countries is justified due to the similarity in terms of geographical proximity, similar geopolitical conditions, common history, traditions, cultures and values (Olah et al., 2019a, 2019b; Dvorsky et al., 2021). These countries have undergone a complete transformation of their economies.

Enterprise risk management plays a key role in managing any enterprise, especially in a turbulent environment. However, in the case of small and medium-sized enterprises, the knowledge of owners or managers in the assessment of the sources of market, financial, and personnel risk is of key importance (Khan et al., 2023; Ključnikov et al., 2016). This has crucial implications for the future and the sustainable development of the business.

In the area of the impact of risk management on the sustainable development of the enterprise, the gender of the owner or manager may be relevant. According to stereotypes, gender identities influence the perception of self and others, as well as the perception of social practices and individual behavior (Peng et al., 2022; Rozsa et al., 2022). Researchers indicate that women are clearly less willing to take risks than men, both in life in general and in business (Faccio et al., 2016; Zhang et al., 2022; Post et al., 2022). In the business environment in the Visegrad group countries (V4), market, financial and personnel risks have been in the foreground for a long time. This is evidenced by the studies carried out by the authors of the article from 2018 to the present (Hudáková & Masár, 2018; Kotaskova et al., 2020; Hudakova et al., 2021). Therefore, in the article we pose a research question; are male owners/managers more sensitive to the perception of the impact of business risk on the sustainable development of SMEs than female owners/managers in the Visegrad group countries?

Authors created the following research statements (RSs):

- Gender diversity of respondent play significant role by an evaluation of an positive financial (RS1), personnel (RS2), and market (RS3) effect on the sustainable development of SMEs in the business environment.
- Due to the influence of current negative threats in the business environment, e.g. the Covid 19 pandemic, the war in Ukraine, and increased inflation are giving SME owners and managers a new attitude toward risks. The originality of the article is the processed study on the current attitude of owners and managers of SMEs regarding the management of business risks in connection with gender, which has not yet been addressed by other authors to such a degree and extent. This is a more deeply developed issue and findings that a more effective approach to business risk management leads to increasing the sustainability of SME development.

The structure of the article is as follows: The important discoveries that characterise the scientific gap are described in the theoretical part, which analyses and summarises existing case studies in the research, using a critical lens. The research methodology and objective are explained in the next section. This includes the technique used for constructing a questionnaire (see the Questionnaire and statements section), the methodology for collecting data, as well as the creation of statistical hypotheses and methods for verifying them. The study's findings are presented in the third chapter. The sections that follow contain the discussion of the research, which includes a summary of major findings and a comparison with other

significant studies targeted at solving the problem. Key empirical findings, theoretical and practical consequences, and future research goals are included in the conclusion.

## **1. Literature background**

### **1.1. Market risk**

Based on the processed analysis of the theoretical starting points, it was found that there are no processed studies or surveys in which the authors would assess the direct relationship of market risk to the sustainable development of SMEs linked to gender. The authors most often deal with general views on the sustainability of SMEs in connection with the market environment, e.g. Lopez-Torres (2023) assesses the impact of SME sustainability on competitiveness. Hernandez-Diaz et al. (2021) and Gorondutse et al. (2021) address issues of supporting the sustainability of SME performance from the perspective of strategic flexibility. Bratianu (2020) processed the results of the assessment of the impact of risk management on the sustainability of companies. Other authors deal with the market risks of SMEs in their research. The priority area of research was to analyze the theoretical starting points from the view of the sources of market risks and their impact on the sustainability of SMEs.

Market risk can be defined as a negative (but also positive) influence of the external environment, which is most often associated with the failure (success) of products and services in markets (Belas et al., 2020). This view of market risk mainly assesses the impact of competition, and the behavior of customers, suppliers, market development, etc. Mikušová (2017) defines market risks in terms of value creation and assesses them from the perspective of the risks of new market opportunities (new technologies, changing customer requirements). Other authors, for example Fraser and Simkins (2016), define market risks as marketing risks mainly influenced by marketing factors (e.g. market research, advertising), price (e.g. sales price strategy, global prices of products, materials, and raw materials), and support activities (e.g. technological support for products, promotion).

Several authors (Çera et al., 2019; Fraser & Simkins, 2016; Hudáková & Dvorský, 2018) state that among the most serious market risk sources that significantly affect the development of SME business are: competition, entry of new competition, loss of customers, the unreliability of suppliers, market stagnation, and a lack of new business opportunities. Many businesses are sometimes busy acquiring new customers. They do not realize that an equally important business strategy is to minimize the loss of customers. According to Çera et al. (2019), the cost of acquiring a new customer can be five times higher than the cost of retaining a current customer. Customer churn analysis provides a clearer overview of the risks between current customers and potential customers (Virglerova et al., 2021). In the current global environment and the increasing interconnection of markets at the international level, new competition also enters the market, which in many cases creates a strongly competitive environment, and SMEs in particular have difficulty surviving.

Allahar (2019) states that responsible supply relations in the business chain are a necessary prerequisite for the success of any SME business activity. It is essential that the supplier is able to ensure the enterprise's requirements. If there are insufficient quantities, quality, and inappropriate times of delivery of goods, there will be downtimes in production. On the

contrary, in the case of an excess of goods, or a too early delivery, excess stocks arise, which reduces liquidity.

## **1.2. Financial risk**

Based on the processed analysis of the theoretical starting points, it was found that there are no processed studies or surveys in which the authors would assess the direct relationship of financial risk to the sustainable development of SMEs linked to gender. The authors most often deal with general views on the sustainability of SMEs in connection with the financial environment, e.g. Arsic et al. (2020) in their study address the impact of logistics capacities on the economic and financial sustainability of SMEs. Heenkenda et al. (2022) address the roles of innovation capability in increasing sustainability in SMEs from a perspective of the developing economy in Hungary. Logan et al. (2021) assessed the roles of time in risk analysis from the point of view of consequences for resilience, sustainability, and business management. Other authors deal with the financial risks of SMEs in their research. The priority area of research was to analyze the theoretical starting points from view of the sources of financial risks and their impact on the sustainability of SMEs.

Belas et al. (2020) define financial risk as a possible loss caused on the financial market, a loss caused by the movement of interest rates or non-payment of financial obligations. Financial risk results from changes in the financial market as well as from the approach of managers to correctly decide on financial risk management using individual financial tools.

Several authors (Wang, 2016; Belas et al., 2020; Obeng, 2021; Virak & Bilan, 2022) state that among the most serious financial risk sources that significantly affect the development of SME businesses are: insufficient profit, indebtedness of the enterprise, the inability of enterprises to pay their obligations, and cash flow. Ma et al. (2019) state that liquidity assessment is considered one of the most significant sources of financial risks for SMEs.

The inability of enterprises to pay their obligations causes significant problems in establishing business relations between enterprises. Kotaskova et al. (2020) state that a suitable indicator of the mentioned source of risk is mainly the balance sheet liquidity indicator, which indicates the enterprise's ability to cover its long-term obligations from the proceeds of the sale of its fixed assets. A suitable financial indicator is also the period of repayment of obligations, which provides information about the length of the time period. According to Christensen et al. (2015), most often, cash flow negatively affects the decrease in liabilities and the increase in assets (use of money); on the contrary, cash flow positively increases the decrease in assets and the increase in liabilities (creation of money). According to Ma et al. (2019), their liquidity is the most important for the enterprise itself, as it should be converted into money that the enterprise will have at its disposal in the future.

According to Dodd et al. (2021), other financial risk sources in SMEs include business financing problems and lack of finance, since most of the running of businesses is financed by the capital of the owners themselves.

According to Bosma et al. (2018), this can result in increased costs, corporate debt and debt repayment problems, and consequently high financial risk. A high volume of foreign sources of asset coverage in the balance sheet does not always mean the high indebtedness of the enterprise, therefore it is necessary to analyze the individual financial indicators of the

enterprise's performance. As for the length of business activity, SMEs with long-term market activities have a more secure financial background and are more resistant to financial risks.

Gurrea-Martinez and Daly (2022) argue that lending to enterprises in emerging economies can lead to additional risks for lenders. Currently, when the market is affected by several dynamic and turbulent changes, achieving an profit for an enterprise is a necessary pre-requisite not only for the development of the enterprise but also for its very survival on the market.

### **1.3. Personnel risk**

Based on the processed analysis of the theoretical starting points, it was found that there are no processed studies or surveys in which the authors would assess the direct relationship of personnel risk to the sustainable development of SMEs linked to gender. The authors most often focus on general views on the sustainability of SMEs in connection with the personnel environment, e.g., Boeske and Murray (2022) address sustainability leadership issues in SMEs. Belas et al. (2022) assess the effects of ethical and CSR factors on engineers' attitudes toward SME sustainability. Sikyr et al. (2023), Zieba et al. (2022) and Bratianu et al. (2020) processed the results with an orientation to assess the impact of knowledge risk management on the sustainability of businesses. Other authors deal with personnel risks of SMEs in their research. The priority area of research was to analyze the theoretical starting points from of view of the sources of personnel risks and their impact on the sustainability of SMEs.

Currently, the human factor is at the center of attention of every enterprise. According to Fraser and Simkins (2016), the human factor brings a significant degree of unpredictability and uncertainty to the performance of any activity in the enterprise, which can also cause a crisis situation. Several authors, including Karas et al. (2022), Belas et al. (2020) and Hudáková and Dvorský (2018), state that among the most serious personnel risk sources that significantly affect the development of SMEs are: employee turnover, insufficient qualification of employees, employee mistakes, work morale, and relationships at the workplace. Employee turnover is currently a major problem, especially in the service sector, and causes numerous personnel risks.

According to Becker and Smidt (2016), managers and business owners do not know how to sufficiently identify individual fluctuation factors (employment, the rate of compensation for work in the region, the structure of the labor market, the compensation system, the success of the process of integrating an employee into the enterprise, the work climate, communication, etc.).

According to Canameres et al. (2017), insufficient qualifications worsen unemployment in SMEs. The employee's qualification itself depends on the specific work to be performed, his duties and responsibilities, but also on the current offer on the labor market. European policymakers have long been interested in the scope, causes, and consequences of the qualification mismatch in the labor market. The problems posed by the lack and excess of qualifications are particularly serious. According to Kozubíková et al. (2015), business owners should invest in human capital. It is necessary to create platforms for the training and education of employees, to implement control processes more effectively, etc. According to several global studies (Alem et al., 2020), the failure of the human factor is considered to be the most frequent cause of serious problems in the enterprise, not only from the point

of view of employees but to a large extent also of managers. According to Vandlíčková et al. (2021), human errors caused by insufficient qualifications of the employees are considered to be one of the main causes of industrial accidents. Also, human errors by managers can cause wrong decisions that can lead to disastrous financial consequences. Violation of work discipline itself is not enshrined in legislation, but from the point of view of impacts, it is partially enshrined in the Labor Code and the Act on Safety and Health Protection at Work.

According to Yang (2017), it is essential that managers and business owners have several tools at their disposal to influence the behavior and actions of employees, the development of work teams, and, last but not least, the effective use of human potential.

Bernile et al. (2016) claim that the most common mistake of managers is focusing on financial motivation. Financial motivation is important to a certain extent, but nowadays it is necessary to pay attention to the loyalty of employees which is non-financial motivation.

#### **1.4. Gender disparity**

Taking a stereotypical approach, Eriksson (2018) argues that gender identities influence the perception of self and others, as well as the perception of social practices and the behavior of individuals.

Researchers indicate that women are clearly more risk-averse than men, both in life and in business (Faccio et al., 2016; Filippin & Crosetto, 2016; Zhang et al., 2022; Post et al., 2022). Zhang et al. (2022) and Kasirang et al. (2013) found that women are more cautious than men. This is due to the fact that women assess the probability of gains and losses differently than men and are more sensitive to risk in the context of loss (Faccio et al., 2016). On the other hand, men are more confident than women in performing more difficult tasks (Valls Martínez & Soriano Román, 2022; Faccio et al., 2016).

Women may work in low-risk companies or reduce the company's risk when they become executives (Faccio et al., 2016). They decide to limit corporate risk-taking to the level corresponding to their preferences. Being better than male CEOs at negotiating lower valuations, women are less likely to engage in mergers and acquisitions and issue debt (Valls Martínez & Soriano Román, 2022; Faccio et al., 2016). Faccio et al. (2016) also noted that female entrepreneurs' risk avoidance appears to have implications for the efficiency of the capital allocation process. They observed a weaker relationship between the quality of opportunities and the level of investment in companies managed by women compared to men.

According to Belas et al. (2020) and Belas and Rahman (2023), there are no statistically significant differences between male and female entrepreneurs when assessing financial and credit risk. Similarly, there are no significant differences in the attitudes and opinions of entrepreneurs with regard to their gender.

It is also worth mentioning that because the gender of the managers influences the risk-taking in the enterprise (Faccio et al., 2016), gender-diverse boards monitor companies well and are less likely to take financial risks (Valls Martínez & Soriano Román, 2022; Bernile et al., 2016; Post et al., 2022). Gender diversity on the board is associated with reduced corporate (Palvia et al., 2020) and reputational risk (Chen et al., 2017). In addition, women in management positions have high moral and ethical standards and show independent thinking (Prochazkova & Micak, 2023; Zhang et al., 2022). They are willing to make decisions to

reduce tax avoidance practices (Zhang et al., 2022; Wahid, 2019) and are more transparent in disclosing their financial risk (Bufarwa et al., 2020).

Apart from the financial and market aspects, human risk should be mentioned as well. Researchers agree on the fact that the knowledge and experience of the owner or manager influence the sustainable development of enterprises (Bartoš et al., 2015). Insufficient qualifications are the most important source of personnel risk (Hudáková & Dvorský, 2018) and are regarded as the most important cause of internal constraint in the development of SMEs (Dvorský et al., 2019).

## **2. Aim, methodology, data and methods**

The aim of the article is the quantification of the effect size of the business risks in the context of small and medium-sized enterprises' (SMEs) sustainability according to gender. A case study was carried out in 12/2022–01/2023 in the following countries of the Visegrad group (V4): Poland (PL), the Slovak Republic (SR), Hungary (HU), and the Czech Republic (CR).

The data files of the answers of owners/top managers (according to nationality) were completed by using the CAWI methodology (Computer Assisted Web Interview) by the MNFORCE agency. This external agency has a very good reputation and carries out data collection and market research in many fields. Moreover, it is specialised in central European countries. The CAWI method will automatically manage the path of the question using logic conditions like display or skip logic (IdSurvey, 2023). The data collection was realised over two months – from December 2022 to January 2023. The respondent was defined as a owner or top manager of small and medium-sized enterprise (a company with less than 250 employees) operating in the business environment in a V4 group country. In general, it can be said that the respondents filled out the questionnaire in the afternoon in an average time of 9.28 minutes. The questions were translated into the national language of the respondent for better understanding. The questions were selected randomly by computer after the first section of the questionnaire (demographics questions).

The data collection was realised in the same way for each country and with the same criteria regarding the respondents. The criteria were defined as follows: i. each group of respondents (according to demographic questions) must be represented according to the structure of SMEs on the government office of each country (data for 2022); ii. The respondent must be an owner or top manager of an SME; iii. representation of individual regions should follow the geographical distribution of SMEs in the country. The questionnaire was anonymous. The respondent had to answer positively to the question of whether his views can be published for scientific research. The number of respondents with negative answers on this firstly question was 26 (2.3%). The number of positive answers was 1,090 (97.7%), which constituted the final sample file of SMEs. The groups of respondents according to the gender (N – number of respondents; N = 1,090 SMEs; Men – M: N = 601 (55.1%); Women – W: n = 489 (44.9%)) are sufficiently large (according to the N). The results of sample size analysis (N = 468) confirmed this statement with the following details: precision level – 5%; confidence level – 95%; estimated proportion – 0.5.

The questionnaire contained 8 questions about the characteristics of owners/respondents. The statements (4 items) formulated the attitudes of the sustainable development of SMEs in the following section. The business risks sources (12 statements) concerned the perception of the market, financial and personnel management in the company. The owner/manager had to choose one of the following answers (Likert scale – 5 points): 1 – completely agree with the statements; ...; 5 – completely disagree with the statements. Many quantitative researches used exactly 5-point scales to the evaluation of subjective perception of respondents to the context of the business risk management (see e.g. Belas et al., 2020; Olah et al., 2019a; Rozsa et al., 2022 and so on). Likert scale was used because is a technic which used to assess subjective attitudes and perceptions of respondents. It is also used for the possibility of applying quantitative statistical methods (e.g. linear regression modelling, structural equation modelling and so on).

The questionnaire contains the following business risk sources and sustainable development statements.

*Market risk sources (MRS):* MRS1: I rate the market risk (lack of sales for my company) as acceptable. MRS2: The stagnation of the market has no important impact on our business. MRS3: Strong competition in the sector of business has no significant effect on our business. MRS4: The level of consumers' purchases has a positive influence on our business.

*Financial risk sources (FRS):* FRS1: Our company has sufficient profit. FRS2: The indebtedness of the company is adequate (not a high proportion of debt). FRS3: I can adequately manage financial risks in our company. FRS4: Our company has no problem with the ability to pay obligations (insolvency).

*Personnel risk sources (PRS):* PRS1: Our employees are the most important organisational assets. PRS2: Our company invests heavily in improving the qualifications of our employees. PRS3: Employee turnover has no negative impact on my business. PRS4: Employee error has no effect on my (our) business.

*Sustainable development statements (SDS):* SDS1: I understand the concept of sustainable business growth. SDS2: It is essential to also perceive the social and environmental impact of entrepreneurship. SDS3: The sustainable development of our company is a key aspect of entrepreneurship. SDS4: I perceive our company as sustainable.

All statements were formulated in a positive sense. The authors' main idea is that the positive attitudes in the business risk statements (the implementation of enterprise risk management in the company) have a positive effect on the subjective perception of the sustainable development of the SME.

The following hypotheses (H1, H2, H3) were formulated to the verification of the RSs:

H1: Management of market risk has a significant positive effect on the sustainable development of SMEs in the business environment according to the male (HM) and women (HW).

H2: Management of financial risk has a significant positive effect on the sustainable development of SMEs in the business environment according to the male (HM) and women (HW).

H3: Management of personnel risk has a significant positive effect on the sustainable development of SMEs in the business environment according to the male (HM) and women (HW).

The authors implemented the following statistical methods for data analytics: 1. Descriptive statistics – initial presentation of the data file and assumptions (e.g. see Tables 1 and 2); 2. Reliability and validity of the questionnaire – see Table 3; 3. Factor analysis (CFA, EFA) – connections (relationships) between statements and factors; 4. Structural equation modeling – verification of direct relationships between independent factors (business risks) and the dependent factor (sustainable development of the SME); visualisation of the final model according to gender. The SEM model is verified by calculating the summary characteristics (critical values according to Henseler and Sarstedt (2013)): Goodness-of-fit (GFT); CMIN / DF – The minimum discrepancy; Comparative Fit index (CFI); Root Mean Square Error of Approximation (RMSEA); Normed fit index (NFI).

Table 1 contains the structure of the respondents (n = 1,090 SMEs) according to the following characteristics: (CHR): CHR0 – nationality; CHR1 – gender; CHR2 – age; CHR3 – level of education; CHR4 – connection between work position and education; CHR5 – position in the SME; CHR6 – motivation for starting business. CHR7 – the most significant personality trait of owner/manager.

Table 1. Structure of respondents (source: authors' own data collection)

CHR0	1	2	3	4	CHR6	1	2	3
	301	362	162	265		704	278	108
%	27.6	33.2	14.9	24.3	%	64.6	25.5	9.9
CHR2	1	2	3	4	CHR4	1	2	3
	370	324	261	135		398	403	289
%	33.9	29.8	23.9	12.4	%	36.5	37.0	26.5
CHR7	1	2	3	4	5	CHR5	1	2
	164	313	322	144	147		859	231
%	15.0	28.7	29.5	13.3	13.5		78.8	21.2
CHR3	1	2	3	4	5	CHR1	1	2
	83	449	188	347	23		489	601
%	7.6	41.2	17.3	31.8	2.1	%	44.9	55.1

Note: CHR0: 1 – PL, 2 – CR, 3 – SR, 4 – HU; CHR1: 1 – women, 2 – men; CHR2: 1 – less than or equal to 35 years, 2 – from 36 to 45 years, 3 – from 46 to 55 years, 4 – more than 55 years; CHR3: 1 – Elementary school or junior secondary school, 2 – Senior secondary school, 3 – Bachelor's degree, 4 – Master's degree, 5 – Doctoral degree (PhD.); CHR4: 1 – Yes, I do business in the area of my education, 2 – Somewhat related (some business processes are related to the area of my education), 3 – Unrelated; CHR5: 1 – I'm the business owner, 2 – I'm a manager; CHR6: 1 – money, 2 – mission, 3 – Another motivation; CHR7: 1 – proactivity, 2 – creativity, 3 – flexibility, 4 – innovativeness, 5 – other personality trait (autonomy, competitive aggressiveness, risk aversion, and so on).

### 3. Empirical results

Table 2 presents the case study's results of the descriptive statistics of market, financial and personnel risk sources and sustainable development statements.

Table 2. Descriptive statistics of BR's sources and SD's statements (source: authors' own data collection)

ST	G	ME	SD	S	K	ST	G	ME	SD	S	K
MRS1	M	2.41	1.00	0.26	0.51	FRS1	M	2.39	1.07	0.31	0.66
	W	2.24	0.99	0.02	0.66		W	2.39	1.11	0.49	0.55
MRS2	M	2.97	1.23	1.11	0.06	FRS2	M	2.26	1.01	0.17	0.69
	W	2.76	1.23	1.07	0.12		W	2.23	1.05	0.27	0.82
MRS3	M	3.00	1.26	1.12	0.08	FRS3	M	2.01	0.79	0.97	0.74
	W	2.76	1.25	1.15	0.12		W	2.05	0.87	1.31	0.93
MRS4	M	2.09	0.99	0.44	0.86	FRS4	M	1.92	0.89	0.98	0.98
	W	2.10	0.98	0.25	0.78		W	2.05	1.01	0.94	1.05
PRS1	M	1.79	0.83	0.78	0.95	SDS1	M	2.02	0.81	1.31	0.84
	W	1.70	0.81	1.72	1.21		W	1.93	0.77	0.77	0.72
PRS2	M	2.25	0.95	0.17	0.51	SDS2	M	2.00	0.75	1.04	0.66
	W	2.18	1.02	0.07	0.69		W	1.92	0.79	1.95	0.98
PRS3	M	2.88	1.15	0.82	0.03	SDS3	M	2.12	0.86	0.63	0.68
	W	2.75	1.25	0.98	0.13		W	2.04	0.86	0.73	0.79
PRS4	M	3.07	1.31	1.16	0.11	SDS4	M	2.06	0.88	1.10	0.89
	W	2.80	1.37	1.26	0.16		W	1.99	0.86	1.13	0.91

Note: ST – Statements; G – Gender; M – Men; W – Women; ME – Mean; SD – Standard deviation; S – Skewness; K – Kurtosis; BR – Business risks; SD – Sustainable development.

The results (see Table 3) showed that the perception of the sustainable development of the SME is the most positive factor (formula: (SDS1+ ... + SDS5)/4; M/W: ME = 2.050/1.970) according to both groups of respondents. The owners/managers perceive the market risk sources (M/W: ME = 2.616/2.464) more negatively than financial or personnel risks. The most heterogeneous perception of owners/manager relates to the market risk (M/W: SD = 1.119/1.112). Comparison analysis (using a non-parametric approach) between men and women confirmed that there are statistically significant differences in the perception of business risks and sustainable development on the level of significance of 0.05.

Verification of the reliability and validity (CA – Cronbach's Alpha (acceptable value – AV; AV > 0.7); CR – Composite Reliability (AV > 0.7); AVE – Average Variance Extracted (AV > 0.5); CI-TC – Corrected Item-Total Correlation (AV > 0.5); FL – Factor loading (AV > 0.5); C – Communality (AV > 0.5)) of business risk sources (independent factors) and sustainable development (dependent factor) are shown in Table 3.

Table 3. Reliability and validity of the questionnaire (M/W)s (source: authors' own data collection)

MRS: CA = 0.728/0.781 CR = 0.785/0.808 AVE = 0.527/0.526				FRS: CA = 0.780/0.799 CR = 0.865/0.873 AVE = 0.617/0.634			
ST	CI-TC	FL	C	ST	CI-TC	FL	C
MRS1	0.525/0.600	0.684/0.739	0.559/0.547	FRS1	0.517/0.545	0.713/0.733	0.608/0.537
MRS2	0.757/0.603	0.835/0.842	0.697/0.709	FRS2	0.558/0.638	0.750/0.804	0.663/0.646
MRS3	0.574/0.587	0.834/0.821	0.698/0.674	FRS3	0.657/0.703	0.836/0.856	0.700/0.732
MRS4	0.785/0.536	0.554/0.722	0.525/0.578	FRS4	0.646/0.587	0.836/0.787	0.698/0.620

End of Table 3

PRS: CA = 0.715/0.751 CR = 0.777/0.792 AVE = 0.567/0.541				SDS: CA = 0.799/0.815 CR = 0.870/0.878 AVE = 0.626/			
ST	CI-TC	FL	C	ST	CI-TC	FL	C
PRS1	0.589/0.719	0.579/0.579	0.536/0.635	SDS1	0.577/0.601	0.768/0.776	0.590/0.602
PRS2	0.514/0.681	0.714/0.661	0.510/0.637	SDS2	0.630/0.635	0.807/0.803	0.650/0.645
PRS3	0.630/0.756	0.689/0.787	0.575/0.620	SDS3	0.679/0.676	0.836/0.831	0.699/0.691
PRS4	0.674/0.678	0.741/0.756	0.549/0.572	SDS4	0.567/0.628	0.752/0.796	0.566/0.634

Note: ST – Statements.

The results (see Table 3) confirmed that the reliability and validity of BRs and SD are acceptable for both group of owners/managers (M/W). There are values of AVE, FL, CA, CR, C and CI-TC which are higher than acceptable values (e.g. Arnold, 1980). These results were supported by the estimation of the individual KMO test and Bartlett's test of Sphericity for MRS, FRS, PRS and SD (KMO tests: AV > 0.7; Bartlett's test of Sphericity: p-values < 0.001; Norris & Lecavalier, 2010) according to gender (both data files).

The empirical results of the KMO test and Bartlett's test of SEM models according to gender are shown in Table 4.

Table 4. KMO and Bartlett's Test results (M/W) (source: authors' own data collection)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.823/0.873
Bartlett's Test Sphericity	Approx. Chi-Square	3,023.3***/3,041.3***
	df	120/120

Note: \*Sig.> p-value < 0.001.

The results of the KMO test (see Table 4) confirmed that there is a proportion of the variance of individual business risk sources and SD statements that can be explained by background factors (M/W: KMO test = 0.823/0.873; very near to the value of 1). The p-values of Bartlett's test of sphericity (M/W: p-value = 0.000/0.000) are accepted at the level of significance of 0.001.

The total variance explained (initial eigenvalues and rotation sums of squared loadings) of the SEM models are shown in Table 5.

Table 5. Results of the total variance explained (M/W) (source: authors' own data collection)

FC	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
MRS	4.560/0.5.799	28.502/36.247	28.502/36.247	2.638/3.056	16.485/19.097	16.485/19.097
SDS	2.033/1.909	12.704/11.933	41.206/48.180	2.577/2.734	16.104/17.085	32.590/36.182
FRS	1.734/1.127	10.840/7.044	52.046/55.224	2.539/2.449	15.869/15.304	48.458/51.487
PRS	1.062/1.039	6.639/6.496	58.685/61.721	1.636/1.637	10.226/10.234	58.685/61.721

Note: Cum. – Cumulative; FC – Factor; Extraction Method – Principal Component analysis; Rotation: Varimax; Rotation converged in 9/7 iterations.

The results (Table 5) show that the various business risks (MRS, FRS, PRS) and sustainable development (SDS) explained 58.7%/61.7% (M/F) of the variability of the total variance. 41.3%/38.3% (M/W) of the variability of the total variance can be explained by indicators or factors (e.g. perception of corporate social responsibility, level of digitalisation, environmental aspect of entrepreneurs) which are not included in our research. Market risk is the factor that explain to the greatest extent the total variance (M/W: MRS = 16.49%/19.10%).

A graphical visualisation of the SEM models (standardized estimates of coefficients – latent variables and their indicators – manifest variables) is shown in Figures 1 and 2.

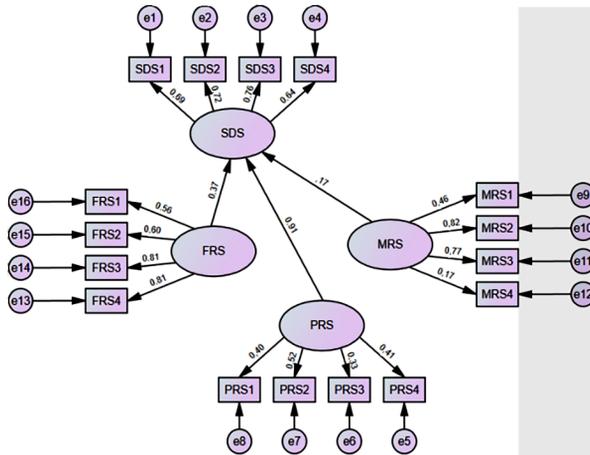


Figure 1. Model of sustainable development of SMEs (Men's perception)

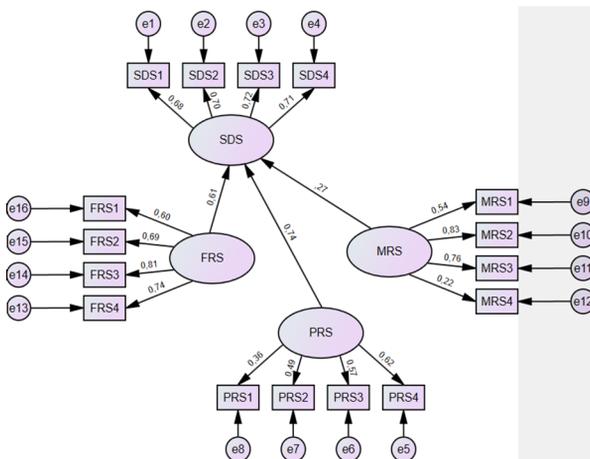


Figure 2. Model of sustainable development of SMEs (Women's perception)

The SEM models (Figures 1 and 2) show that there are direct (positive) effects among business risks (MRS, FRS, PRS) on the sustainable development of SMEs (SDS).

Estimation of regression coefficients (unstandardized), and the calculation and verification of the direct effect of business risk sources (market, financial and personnel) on the sustainable development of SME are shown in Table 6.

Table 6. Evaluation of statistical hypotheses (M/W) (source: authors' own data collection)

Sign of Hyp.	Rel.	Path Coef.	SE	Critical ratio	Sig. p-value	E Hyp. (M/W)
HM1/HW1	MRS>> SDS	0.209/0.265	0.052/0.044	4.020/6.067	<0.001/<0.001	S/S
HM2/HW2	FRS >> SDS	0.289/0.439	0.034/0.039	8.520/11.393	<0.001/<0.001	S/S
HM3/HW3	PRS >> SDS	0.963/0.460	0.111/0.043	8.704/10.610	<0.001/<0.001	S/S

Note: Hyp. – Hypotheses; Rel. – Relationship; PC – Path unstandardized coefficient; SE – Standard error; Sig. – Significance; E – Evaluation; S – Supported; R – Rejected.

The empirical results of the verification of the direct effect of the BRs (see Table 6) confirmed that there are statistically significant relationships (MRS, FRS and PRS) among the SDS according to gender (M/W). Each hypothesis (H1, H2 and H3) was supported.

The FIT characteristics on the verification of the SEM models of sustainable development of SMEs (M/W) are shown in Table 7.

Table 7. Final SEM models FIT characteristics (M/W) (source: authors' own data collection)

FIT Characteristics	DF	CMIN	CMIN/Df	RMSEA	CFI	NFI
Final SEM model (M)	102	162.41	1.592	0.071	0.981	0.931
Final SEM model (W)	102	147.87	1.450	0.058	0.988	0.927
Accepted value			<-2.0;2.0>	<0;0.08>	>0.95	>0.90

Table 7 indicates that the quality of the SEM models is acceptable, because the values of CMIN/DF, RMSEA, CFI, NFI are higher than their acceptable values. The results of the Goodness of fit are acceptable; M/W: chi-square = 162.41/147.87; p-value = 0.000/0.000.

The results of the effects size are the following: H1: MRS >> SDS: M/W – f-square = 0.176/0.312 – small/medium effect; H2: FRS >> SDS: M/W – f-square = 0.431/0.394 – medium/medium effect; H3: PRS >> SDS: M/W – f-square = 0.876/0.414 – strong/medium effect.

## Discussion

Based on the initial analysis of the theoretical starting points, it was found that there are no processed studies or surveys in which the authors would assess the direct relationship of market, financial, and personnel risks to the sustainable development of SMEs in connection with gender. Also, authors have ambition to compare findings with similar results of other authors focused on the sources of market, financial, and personnel risks of SMEs in general.

Our case study showed the following significant findings. The management of market, financial and personnel risks has an important role in the sustainable development of SMEs for both male and female entrepreneurs. The results show that assessing and treating risks is important for the sustainable development of SMEs. The perception of risks is influenced

by the experience of SME owners and managers, their knowledge of the environment and of their strengths as well as areas of vulnerability (Çera et al., 2019). SMEs are very sensitive to changes in the business environment, but on the other hand, due to their specificities, they have the possibility to react to them more flexibly. Smith et al. (2022) note that external risks and threats are compounded by managers' mistakes in detecting them and especially incorrect and ineffective ways of reacting to them. According to several authors (Journeault et al., 2021; Bratianu, 2020; Olah et al., 2019a), the greatest business risks for SMEs arise from the nature of the market environment, the environment in the industry, the economic conditions in the country. In SMEs, focusing attention on the early identification of risks and on a timely response to possible threats is vital (Zieba et al., 2022; Logan et al., 2021). Management of market risk has a small positive effect on the sustainable development of SMEs for male entrepreneurs, but for female entrepreneurs this effect is of medium size.

We can evaluate, based on our results and results from other studies (for example, Belas et al., 2020; Kim & Vonortas, 2014), that market risk is one of the most important risks affecting the sustainable development of SMEs. This is the reason why the assessment of market risk sources is currently considered a very important topic, receiving attention in many scientific studies (Fraser & Simkins, 2016). According to Dvorský et al. (2019), only a sufficient number of customers allows SMEs to realize an adequate volume of sales which allows them to maintain their position in the market. SMEs must develop their competitive advantages to survive. Bednarz et al. (2023) and Metzker et al. (2021) state that competitiveness should also be the primary goal of every type of business and be the highest priority of SME managers. The results of the study by Ključnikov et al. (2016) state that it is a necessary condition for an enterprise to create an efficient supply chain that will fulfill its primary and secondary functions. This is also confirmed by Çera et al. (2019), who notes that SMEs must be prepared and look for solutions to market stagnation or the lack of new business opportunities which have a strong connection to other market risk sources. According to Mikušová (2017), the development and emergence of business opportunities depend on the potential and development of the region in which SMEs carry out their business activities.

Management of financial risk has a medium positive significant effect on the sustainable development of SMEs for both genders of owners/managers.

The processed results of our study confirm the findings of other authors, for example, Olah et al. (2019a) and Slusarczyk and Grondys (2019), that financial risks sources (payment discipline and profitability) are among the main reasons for termination and influence the sustainable development of SMEs in V4 countries. Due to low sales, companies are unable to generate profit and thus repay their liabilities. As a result, their indebtedness increases and they have to close their business. Dodd et al. (2021) state that receivables also have a significant impact on the overall value of the enterprise. The Covid-19 pandemic has left many businesses with insufficient funds to pay invoices, causing individual receivables to accumulate past due date (Achim et al., 2022). Many receivables became uncollectable and enterprises increasingly fall into secondary insolvency. Pflueger et al. (2020) point out that the perception of financial risk is an important driver of economic fluctuations. They argue that high perceived risk is associated with low risk-free interest rates, high capital costs for risky enterprises, and future declines in output and real investment.

The perception of male entrepreneurs of personnel risk is the strongest positive effect on the sustainable development of SMEs. In this context, the management of personnel risk has a medium effect on the sustainable development of SMEs.

The results of our study show that it is very important to monitor personnel risks that strongly influence the sustainable development of SMEs. As stated by Gede Riana et al. (2020), the quality of human capital in SMEs is the basis for increasing business performance. A high rate of employee turnover has a negative effect, mainly on personnel costs, the credibility of the enterprise, the motivation of employees, and the competitiveness of the enterprise itself. Becker and Smidt (2016) claim that insufficient qualifications or inconsistent employee training have a direct link to the occurrence of employee errors or human factor failures. With inconsistent training, the employee creates his own procedures, which makes his work easier, which in many cases comes at the expense of the quality or the process itself. The results of the study by Kozubíková et al. (2015) show that if an enterprise wants to eliminate human errors, it must have a clear and detailed risk management strategy (the plan of measures) and link it to the culture of the enterprise. It is important to develop a positive interpersonal relationship between individuals working at different levels of the organization (Dumitrescu & Deselnicu, 2018). Teamwork helps contribute to the creation of positive interpersonal relationships and supports the need for affiliation and community. Empirical studies by Neary et al. (2018) show that the voluntary efforts of employees increase productivity and performance and create more space for the sustainable development and competitive advantage of SMEs.

Market risk is mostly perceived through the prism of strong competition in the industry, as well as the loss of customers, the unreliability of suppliers, and market stagnation (Hudáková & Dvorský, 2018). In previous research, Dvorský et al. (2019) stated that there are no significant differences between entrepreneurs according to gender. However, based on our findings we may say that market risk management has a small positive impact on SMEs sustainability for male entrepreneurs, but a medium effect on female entrepreneurs. Such a conclusion may be drawn taking into account the fact that women are more cautious than men (Zhang et al., 2022; Kasirang et al., 2013); however, men are more confident in performing more difficult tasks than women (Valls Martínez & Soriano Román, 2022; Faccio et al., 2016).

Based on previous research Hudáková and Dvorský (2018) claim that the most important source of financial risk is the company's insufficient profit. Other elements of financial risk are unpaid receivables, insolvency, and company debt.

Personnel risk is connected with the qualifications of managers and employees. Ključnikov et al. (2016) claim that entrepreneurs with higher education are better prepared to run a business. Hudáková and Dvorský (2018) underline that the most important source of personnel risk is insufficient qualifications. This category of risk is widely regarded as the most important cause of internal constraint in the development of SMEs (Dvorský et al., 2019). That is why we may say that the perception of personal risk by male entrepreneurs has the strongest positive impact on the sustainable development of SMEs. In this context, personnel risk management has a medium impact on the sustainable development of SMEs. Dvorský et al. (2019) note that the involvement of owners and managers in risk management has a

positive impact on avoiding errors and ensures proper management, which is closely related to the declared level of risk acceptability.

## Conclusions

The aim of the article was the quantification of the effect size of business risks in the context of SMEs' sustainability according to gender.

The results of the empirical study confirm the results of other researchers that assessing and treating risks is important for the sustainable development of SMEs. Moreover, it was proven that market risk is one of the most important risks affecting the sustainable development of the segment of small and medium-sized companies. Financial risk management (payment discipline, level of receivables, profit, and profitability) has an average positive, significant impact on the sustainable development of SMEs for both sexes of owners/managers. The Covid-19 pandemic was of great importance in this area. RS1 was rejected.

The perception of personal risk by male entrepreneurs is the strongest positive impact on the sustainable development of SMEs. It is very important to monitor personal risks resulting from the quality of human capital (level of education and qualifications, errors caused by employees, employee turnover, and interpersonal relations between people working at different levels of the organization. RS2 was supported.

Market risk is most often perceived through the prism of strong competition in the industry, as well as loss of customers, the unreliability of suppliers, and market stagnation. RS3 was supported.

The management of market, financial, and personnel risk sources and their positive effect on sustainable development is the most significant for both genders of owners/top managers. The research question was not accepted. Female owners/managers are more sensitive regarding the perception of the effect of business risk on the sustainable development of SMEs than male owners/managers.

The empirical results of the case study provide important benefits and contributions to the sustainable development of SMEs in Poland, the Slovak Republic, Hungary, and the Czech Republic. The processed results primarily present a view of current business risks and help in promoting a systematic approach to risk management for a timely and adequate response of SMEs to the consequences of changes in the environment and for maintaining the continuity of long-term development goals. The results are also intended for competent managers in various institutions, and organizations, in the creation of concepts, policies, and the development of business culture at the regional, national, but also international levels.

The limitations of our research were that the empirical research was carried out during a crisis event - the time of the Russia-Ukrainian conflict. The attitudes of owners or top managers of small and medium-sized enterprises are very sensitive (subjective) to crisis events and there are very frequent changes of perceptions regarding business activities and their approach to the management of risk. The authors evaluated the statistical hypotheses using only one quantitative approach method (SEM), data collection was carried out in the business environment of only four European countries.

Future research should focus on the effect of gender on other business risks, such as national support and legislative changes, operational or technological risks. The comparison of attitudes on the level of digitalisation or the environmental aspect of entrepreneurship in SMEs among owners/managers according to gender can also bring interesting findings. Authors would like to realise the empirical research again – after finished Russia – Ukraine conflict. Changes related to the gradual growth of the business environment in Ukraine can determining the perception of business risks of owners/managers of SMEs in the Visegrad group countries.

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## **Author contributions**

Abstract: Jan Dvorsky, Judit Olah Introduction: Joanna Bednarz, Maria Hudakova Theoretical review: Joanna Bednarz, Maria Hudakova Methodology: Jan Dvorsky, Judit Olah Results: Jan Dvorsky Discussion: Jan Dvorsky, Joanna Bednarz, Maria Hudakova Theoretical, practical and societal implications: Judit Olah Conclusion: Jan Dvorsky, Maria Hudakova, Joanna Bednarz References: Judit Olah, Maria Hudakova.

## **Disclosure statement**

Authors declare that have not competing financial, professional, or personal interests from other parties.

## **Informed consent statement**

Informed consent was obtained from all subjects involved in the study.

## **Data availability statement**

Data sharing not applicable.

## **Conflicts of interest**

The authors declare no conflict of interest.

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