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Factors Influencing Organizational Resilience of Tourism Businesses

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Background and purpose: With ongoing disruptions that affect various sectors, understanding organizational resilience is crucial, especially in tourism businesses. However, studies focusing on organizational resilience often lack objective data and rely on subjective opinions. Even fewer studies combine company data with insights from managers. Therefore, this study aims to explore resilience factors in tourism businesses and strategies used by less resilient ones during the COVID-19 crisis.
Methods: This study used a mixed-method approach to explore organizational resilience, combining company data analysis with insights from tourism managers. Quantitatively, data from 624 Slovakian tourism businesses were analyzed using the Mann-Whitney U test, binary logistic regression, and survival analysis to explore resilience factors. Based on this, qualitative interviews with 10 managers of less resilient businesses examined crisis coping strategies.
Results: The findings reveal that business size and age are significant predictors of resilience, with larger and newer businesses demonstrating a higher probability of maintaining or recovering pre-pandemic revenue levels. Regarding financial indicators, the analysis suggests that rapid debt growth may represent a potential vulnerability. In addition, accommodation services were found to be generally more resilient than restaurants and travel agencies. Qualitative results highlight that less resilient businesses frequently employed coping strategies such as renegotiating financial terms, reducing staff, and temporary closures.
Conclusion: Tourism stakeholders should take these implications into account and assess the key factors that may strengthen organizational resilience.

Keywords: Organizational resilience, Tourism businesses, Logistic regression, Survival analysis, Slovakia

1 Introduction

Recently, major disruptions such as pandemics, environmental disasters, and geopolitical changes have affected the tourism sector, raising interest in the concept of resilience. As global and local disturbances continue to challenge businesses in various sectors, recognizing the factors that enhance their resilience has become essential. In this sense, the COVID-19 pandemic is particularly significant due to its profound impact, especially on tourism businesses (Melián-Alzola et al., 2020; Lesáková et al., 2022; Jesus et al., 2025). Furthermore, due to the pandemic, the concept of resilience has received increasing attention from both academia and practitioners in various fields (Svoboda et al., 2024). Although the most severe impact of the COVID-19 pandemic has passed, this provides an appropriate opportunity to reflect on the lessons learned (Yang & Wen, 2024; Malá et al., 2024).

In recent years, resilience has become increasingly significant in tourism (Hall et al., 2023; Jesus et al., 2025).

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The COVID-19 pandemic, for example, highlighted the fragility of international travel systems and the dependence of economies on tourism. Environmental crises and political disturbances further disrupt business operations and discourage tourists. By strengthening resilience, tourism stakeholders can accelerate recovery from disruptions and enhance their long-term adaptability, thus ensuring the sector's continuity, competitiveness, and sustainability.

Organizational resilience is defined as the ability of a business or organization to endure substantial disruptions without experiencing significant damage (Neise et al., 2021). Resilient businesses can maintain or quickly resume operations, both financially and operationally, during disruptions. It is commonly understood that factors such as a business's financial status prior to a crisis (Poretti & Heo, 2022), its level of debt (Neise et al., 2021), type of services, age, size, and geographic location may all influence the resilience of tourism businesses (Türkcan & Erkuş-Öztürk, 2020; Jang & Kim, 2022). However, despite general knowledge of these factors, most studies rely on subjective opinions and information gathered from surveys and interviews. Therefore, there is a lack of evidence based on company data that could provide more objective insight into the resilience of tourism businesses (Saad et al., 2021).

Consequently, this study used company data to examine factors that impact the resilience of tourism businesses. This study is set in the context of tourism businesses in Slovakia. In recent years, these businesses have faced numerous disruptions, with the COVID-19 pandemic and related lockdowns representing the most significant challenges. Based on secondary data, the study identified resilient and less resilient businesses and explored factors that positively impact tourism businesses considered resilient. Furthermore, semi-structured interviews were also applied to gain insight from tourism managers from less resilient businesses about their measures to cope with the crisis, complementing the results based on company data. Therefore, this study aims to address the following research questions:

RQ 1: What factors positively influence whether tourism businesses can be considered resilient?

RQ 2: What measures have less resilient tourism businesses adopted to cope with crises?

The mixed-method approach distinguishes this study, as it is one of the few studies that directly links research on organizational resilience from the perspective of company data and supplements these results with information from tourism managers of these businesses. Therefore, this research fills a literature gap by evaluating organizational resilience factors through a combination of company data and semi-structured interviews.

2 Theoretical background

In recent years, numerous significant disruptions have impacted the tourism sector, including pandemics, environmental catastrophes, and geopolitical changes, leading to increased interest in the concept of resilience (Badoc-Gonzales et al., 2022). UNISDR (2009) defines resilience as the ability to resist, absorb, adapt and recover from hazards efficiently, preserving and restoring essential structures and functions. Consequently, in tourism research, resilience is often understood through the lens of Holling's (1973) definition, characterizing it as a system's capacity to endure changes while sustaining its operations.

The study of resilience encompasses three primary perspectives: engineering, ecological, and socioecological (Hall et al., 2023). Engineering resilience examines the impact of disruptions on a system and how quickly it can recover to its original state of balance, commonly referred to as "bouncing back" (Svoboda et al., 2024). An ecological perspective emphasizes the extent to which a system can withstand disruptions before transitioning to a new state of balance (Sterk et al., 2017). Socioecological resilience focuses on the capacity of systems to self-organize, adapt, and innovate (Hall et al., 2018). According to Svoboda et al. (2024), numerous studies on economic crises employ an engineering approach, which is favored for its simplicity and transparent methodology.

Within tourism research, the engineering perspective remains dominant (Hall et al., 2023). This perspective assumes a mechanistic system characterized by relatively straightforward cause-and-effect relationships (Barasa et al., 2018). From this perspective, resilience can be defined as the ability to return to a previous state or condition after an external stressor or shock (Orchiston et al., 2016), thus "bouncing back". However, several studies emphasize the "bouncing forward" approach, which extends resilience beyond recovery (Prayag, 2023). It views disruptions as opportunities for growth, with the aim of a stronger and more adaptable tourism sector (Mihotić et al., 2023). This approach emphasizes the development of a stronger and more adaptable system rather than a simple return to pre-crisis conditions.

The resilience concept can be applied to individuals, businesses (organizations), communities, and tourist destinations (Hall et al., 2023; Prayag, 2023). Individual resilience involves the psychological resilience of employees, residents, or entrepreneurs (Hall et al., 2018). Organizational resilience, also known as business resilience, is the ability of a business to withstand major disruptions without significant losses (Neise et al., 2021). Community resilience is related, for example, to the local population and their ability to absorb the negative economic, sociocultural, and environmental impacts of tourism (Gocer et al., 2024). Destination resilience spans local to transnational

levels, focusing on adapting to negative impacts for a more resilient tourism ecosystem (Holladay, 2018).

From another perspective, Bui et al. (2021) identify three distinct levels of tourism resilience: the macro level, the meso level, and the micro level. At the macrolevel, resilience refers to tourism systems, destinations, and communities dependent on tourism (Duro et al., 2022; Hall et al., 2023; Ketter, 2022). The meso level refers to resilience within tourism businesses (Melián-Alzola et al., 2020; Neise et al., 2021), including non-governmental and public institutions (Braje et al., 2023). At the microlevel, the focus shifts to the resilience of tourism employees, entrepreneurs, various tourist segments, and local residents (Prayag, 2023).

Exploring the meso level and the concept of organizational resilience in the business literature, resilience is often defined as a business's ability to effectively respond to both natural and human-made disasters (Hadjielias et al., 2022). Jiang et al. (2019) describe it as the capacity of a business to endure and adapt to external environmental changes, manage and address the adverse impacts of these changes, and progress to an improved state, thus enhancing future performance. Therefore, organizational resilience can be understood as the ability to cope with significant operational disruptions resulting from unexpected events, enabling it to persevere and operate effectively in the face of ongoing threats (Prayag et al., 2018). Resilient businesses can continue to operate without major interruptions or quickly restart their activities when faced with disruptions. This can be seen, for example, from both a financial and operational perspective.

In tourism and business management research, several factors have been recognized as influencing organizational resilience. Among the most critical aspects, financial performance prior to the shock is emphasized. Neise et al. (2021) examined the opinions of restaurant managers in Germany amid the COVID-19 pandemic. They discovered that businesses that were already facing poor economic and financial performance before the crisis were considered less resilient. Therefore, businesses with limited financial reserves would struggle more with the impacts of lockdown if they were already struggling before the crisis.

Furthermore, Wieczorek-Kosmala (2022) examined the resilience of tourism businesses in four Central European countries, focusing on their capacity to manage cash resources. The study revealed that businesses that exhibit stronger cash-driven resilience tend to achieve higher profitability and face fewer financial limitations. In addition, Poretti and Heo (2022) examined global tourism business data and observed that businesses with higher profitability and productivity experienced a stronger recovery from the COVID-19 crisis. Debt is another critical determinant, as interest must be paid regardless of whether the business makes a profit. Businesses that have already dealt with significant debt prior to a shock may be at increased risk. Neise et al. (2021) also stated that businesses with substantial debts and loans were less likely to be seen as resilient. Therefore, businesses with strong financial performance, effective cash management, and lower debt levels before the COVID-19 crisis are perceived as more resilient.

The type of business also influences the resilience of tourism businesses. Sobaih et al. (2021) employed structural equation modeling to determine that the type or focus of a business, such as hotels and restaurants, affects its ability to be resilient. Their findings indicated that restaurants successfully adapted to the pandemic by switching to delivery services, helping them recover from the business impact and maintain their performance. In contrast, numerous small hotels, especially those that lack on-site kitchen facilities, faced challenges in adapting during the pandemic. Furthermore, due to travel restrictions imposed during the pandemic, travel agencies and tour operators experienced more severe impacts compared to other tourism businesses (Pompurová et al., 2022). Tourist packages from travel agencies were purchased less frequently, as travelers opted to stay within their own countries or adjust their destinations according to changing pandemic conditions (Dudek et al., 2024).

An additional factor is the age of the business. Numerous scholars suggest that a business's chances of resilience increase as it matures, as indicated by the number of years it has been in operation (see, e.g., Neise et al., 2021). Türkcan and Erkuş-Öztürk (2020) confirmed that the age of tourism businesses has a positive impact on their survival during an economic and political crisis. Therefore, it is assumed that businesses with a longer history are likely to be more experienced and may be better prepared to handle disruptions. This accumulated experience can provide them with the strategic foresight and flexibility necessary to adapt to unforeseen circumstances, making them more resilient in the face of disruptions.

In terms of size, smaller tourism businesses may be more vulnerable to shocks (Ntounis et al., 2022). They often have limited financial resources, making it challenging to absorb unexpected costs. Their dependence on local markets means that any local economic downturn can significantly impact their revenue. Additionally, smaller businesses generally have less diversification in their products or services, reducing their ability to pivot during crises (Hadjielias et al., 2022). Higher operating costs, such as rent and utilities, can also be more difficult to manage.

Location also plays an important role in organizational resilience. Brouder and Eriksson (2013) conclude that tourism businesses located in more agglomerated areas, such as urban centers, tend to have better survival rates and, therefore, could be perceived as more resilient. However, the COVID-19 pandemic challenges this assumption due to various restrictions, such as social distancing limits, leading to changes in tourist behavior, which has begun to prefer less dense areas (Cao et al., 2024). Jang and Kim

Table 1: Key Findings: Facilitated Lecturer-Learner Interaction

Criterion	Description	No	%
Type	Accommodation services	261	42
	Restaurant services	194	31
	Tour operators/ Travel agencies	169	27
Age	Up to 10 years	29	5
	10 to 20 years	326	52
	More than 20 years	269	43
Size	1 to 9 employees	361	58
	10 to 49 employees	233	37
	50 and more	30	5
Location*	Western Slovakia	331	53
	Central Slovakia	157	25
	Eastern Slovakia	136	22
Total	-	624	100

Note: Western Slovakia comprises four regions: Bratislava, Trnava, Trenčín, and Nitra. Central Slovakia consists of two regions: Žilina and Banská Bystrica. Eastern Slovakia includes two regions: Prešov and Košice
Source: authors

(2022) confirmed this by revealing that the impact of the pandemic on Airbnb providers' performance in the state of Florida was less significant in rural areas.

It is evident that various factors can impact the resilience of tourism businesses. However, when addressing these factors, many of the studies mentioned above rely on subjective perspectives and data derived from interviews. Furthermore, Saad et al. (2021) noted in their systematic review of organizational resilience of SMEs that, out of the 66 articles empirically dealing with organizational resilience, only four applied a research design that relies on secondary data on business performance. Therefore, there is insufficient evidence from company data that could provide an objective perspective on the resilience of tourism businesses. Hence, this study analyzed company data to determine factors that influence the resilience of tourism businesses. It identified resilient and less resilient businesses and examined positive influences on resilient ones. Additionally, semi-structured interviews with managers of less resilient businesses provided additional insight into their crisis measures.

3 Research methodology

This article aims to examine the factors that influence the organizational resilience of tourism businesses and the measures used by less resilient businesses to cope with the crisis. The context of this study is focused on tourism businesses in Slovakia. These businesses have recently faced many disruptions, the COVID-19 pandemic and lockdowns being the most significant challenges. The analysis of company data and the use of in-depth interviews helped achieve the study objective.

Company data was first obtained from Finstat, an online platform for analyzing businesses in Slovakia and other European countries. Businesses were selected based on type and size, including accommodations, restaurants, tour operators or travel agencies, and micro, small, and medium-sized businesses. Data collection included financial indicators (revenues and debt from 2015 to 2022), classification variables (number of employees, years of operation, and location) and company identification numbers for further analysis. Indicators such as profitability and liquidity were initially included, but excluded from the final model due to low statistical significance and lack of additional explanatory power. Data were collected from 624 businesses, forming the first research sample (Table 1).

In the second step, we first constructed a binary variable that classified the businesses as resilient (1) or less resilient (0). A business was classified as resilient if, in any of the pandemic years (2020–2022), it generated at least 90% of its average revenue from the pre-pandemic period (2015–2019). This method aligns with studies that assess resilience as a return to a previous stage in tourism businesses (Ntounis et al., 2022; Marciš et al., 2025) or destinations (Duro et al., 2022). This approach uses an engineering perspective to study how tourism businesses and destinations recover from external disruptions (Hall et al., 2023). The categorization enabled the analysis of dif-

ferences in debt and revenue growth, business size, type, age, and location. We used the Mann-Whitney U test to assess the statistical significance between resilient and less resilient tourism businesses.

Beyond confirming statistical differences in organizational resilience among tourism businesses, we examined the dependency between selected factors and organizational resilience. We selected our statistical method based on the binary nature of the dependent variable, which is categorized as either resilient or less resilient. The binary logistic regression analysis consisted of two models. The first used a single quantitative variable: the growth rate of business debt. The second combined several types of variables: ordinal (size), nominal (business type, location), and quantitative (age). This method helped us verify and analyze the direction and strength of these relationships using logistic functions.

To assess the quality of the model and the variable relationships, we used the Cox and Snell R^2 and Nagelkerke R^2 statistics. These methods demonstrated the ability of the model to explain the variability in organizational resilience. Cox and Snell R^2 estimated the variability explained by independent variables, while Nagelkerke R^2 adjusted the R^2 value never to be lower than the values of traditional linear models. We used two significance levels ($\alpha = 0.05$ and $\alpha = 0.10$) for a flexible assessment of the strength and importance of the relationship.

In the third step, we employed survival analysis to refine the results from binary logistic regression, thereby verifying the time-dependent relationship between factors and a business's resilience probability. Survival analysis is a statistical method used to examine the time until an event, such as a business closure, occurs. Yang and Wen's (2024) research on the endurance of hotels amid the COVID-19 pandemic employed survival analysis to determine the operational duration of hotels and identify the elements that contributed to their shutdowns. This method is also valuable when some entities (such as businesses) are still operating at the end of the study period. Therefore, we applied this method to assess the resilience of tourism businesses. In our study, time refers to the number of years a tourism business has been in operation. First, we examined how the size of the business (in terms of the number of employees) affected the probability of resilience. We then analyzed whether resilience varied by business type (e.g., accommodation, restaurants and travel agencies). Kaplan-Meier analysis was used to visualize group differences and assess whether resilience changed significantly over time with different factors.

In the final step, based on the results, we contacted businesses considered less resilient to gather information from their managers about their measures to cope with the pandemic. We employed a qualitative approach and conducted semi-structured online interviews. Participants were selected using a purposive sampling technique as part of a nonprobability sampling method. We identified 70 less resilient tourism businesses and contacted them by email to inform them of the research objectives. Once their agreement was obtained and permission to record the discussions was granted, semi-structured online interviews were conducted with 10 tourism managers between April and June 2024 (Table 2).

Table 2: Characteristics of the second sample

Business	Type	Age	Size	Destination	Position of the respondent
B1	Restaurant	10 y	1 to 9	Urban	Manager
B2	Restaurant	5 y	10 to 49	Rural	Manager
B3	Restaurant	7 y	10 to 49	Urban	Owner
B4	Restaurant	4 y	1 to 9	Urban	Manager
B5	Accommodation	6 y	10 to 49	Rural	Owner
B6	Accommodation	10 y	1 to 9	Urban	Owner
B7	Accommodation	8 y	10 to 49	Urban	Manager
B8	Tour operator	12 y	10 to 49	Urban	Owner
B9	Tour operator	7 y	1 to 9	Urban	Manager
B10	Tour operator	6 y	1 to 9	Urban	Manager

Source: authors

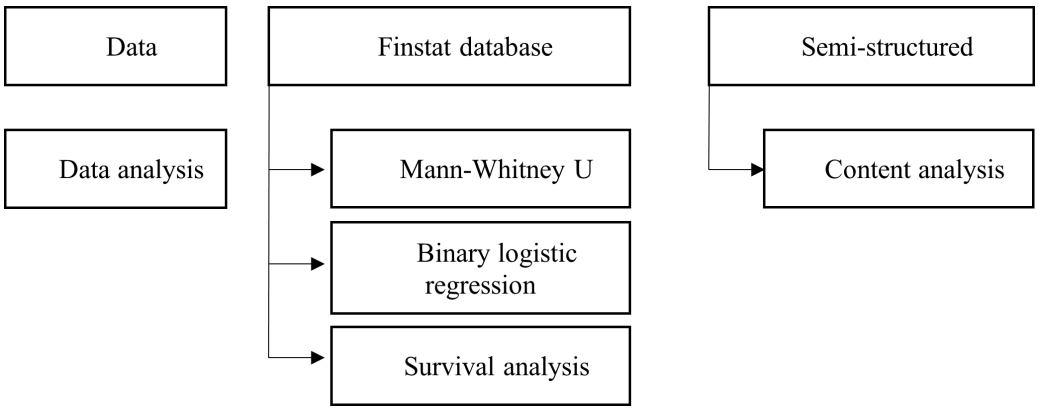

Figure 1: Research process
Source: Authors

The respondents answered 10 open questions. The questions focused primarily on the financial and non-financial measures they applied during the pandemic, how they evaluated state assistance in the form of subsidy schemes, and how they reevaluated the measures and the situation. We applied content analysis to examine the data obtained from semi-structured online interviews. SPSS 24 and R were used for quantitative data analysis. Figure 1 illustrates the research process.

4 Results

4.1 Resilient and less resilient tourism businesses

The results showed that 25.48% of the businesses were unable to reach the revenue levels they achieved before the pandemic restrictions were implemented. In contrast, 74.52% of businesses managed to achieve at least 90% of their average pre-pandemic revenue levels. However, it is important to note that many businesses received state aid to cover fixed costs, which may have influenced their financial performance (Lesáková et al., 2022).

Subsequently, we examined whether there is a statistically significant difference in various factors between resilient and less resilient tourism businesses. Factors analyzed include size, type, age, location, rate of debt growth/decline, rate of growth / decline in revenues before the pandemic, and rate of growth / decline in revenues during the pandemic. As the data were not normally distributed, we rely on non-parametric testing using the Mann-Whitney U test of independence (Table 3).

The Mann-Whitney test revealed significant differences in economic factors, particularly in the debt and revenues of tourism businesses. Less resilient businesses showed faster debt growth, confirmed by a higher mean rank than resilient businesses, with a p-value below 0.05. Resilient businesses also showed higher revenue growth before and during the pandemic, with p-values lower than 0.05.

We used a two-sided test to compare factors hypothesized to be equal between the groups. A significant difference was found only in size, with resilient businesses having more employees. On the other hand, for factors such as type of business, age and location, no significant differences were found between binary variables, as the p-values were not significant.

After identifying statistically significant differences between resilient and less resilient tourism businesses in terms of various factors, we subsequently analyzed their average values (Table 4). We did not include size in this analysis because it is an ordinal variable, where calculating the average can lead to skewed results. The results show that the growth of debt was faster in the less resilient tourism businesses than in the more resilient ones. Additionally, more resilient tourism businesses had higher average revenue growth during the pandemic, with 499.94% compared to 188.70% for less resilient ones, indicating better adaptability to change.

In 2020, less resilient businesses saw their revenues drop to 45.71% during the pandemic. This decline continued in 2021, with a decrease to 36.73%. By 2022, revenues recovered to 63.60%, still below pre-pandemic levels. More resilient businesses performed better, with a revenue share of 77.29% in 2020, improving to 82.97% in 2021 and reaching 146.78% in 2022, surpassing pre-pandemic levels (Table 5).

These results suggest that more resilient businesses had a better ability to adapt to the adverse conditions of the pandemic, and their revenues were able to stabilize and even grow. In contrast, less resilient businesses faced a significant decline in revenues that persisted throughout the pandemic.

Table 3: Mann-Whitney U test for resilient vs. less resilient tourism businesses

	Mann-Whitney test	Mean Rank	
		Less resilient (0)	Resilient (1)
Monte Carlo Sig. (2-tailed)	p-value = 0.000 Difference in number of employees	263.93	329.11
	p-value = 0.909 Similarity in business types	313.57	312.13
	p-value = 0.145 Similarity in years of operation	330.44	306.36
	p-value = 0.324 Similarity in location	316.88	300.91
Monte Carlo Sig. (1-tailed)	p-value = 0.050 Higher debt growth in less resilient group	331.18	305.43
	p-value = 0.000 Higher revenue growth in resilient group (pre-pandemic)	213.20	341.38
	p-value = 0.000 Higher revenue growth in resilient group (during pandemic)	249.95	333.89

Source: authors

Table 4: Average significant factors for resilient vs. less resilient tourism businesses

Tourism businesses	Growth rate of business debt (2019-2022) in %	Growth rate of business revenues during COVID-19 (2020-2022) in %
Less resilient	50.41	188.70
Resilient	17.92	499.94

Source: authors

Table 5: Average annual revenue share compared to pre-pandemic values

Tourism businesses	During the COVID-19 pandemic		
	2020	2021	2022
Less resilient	45.71%	36.73%	63.60%
Resilient	77.29%	82.97%	146.78%
Total	69.24%	71.18%	125.59%

Source: authors

4.2 Logistic Regression and Survival Analysis

Using binary logistic regression, we further analyzed the factors that influence the resilience of tourism businesses during the pandemic. To improve interpretability and reduce model complexity, the independent variables were divided into two regression models. We developed two models that focus on individual factors that affect the resilience of tourism businesses. The first model examined the importance of business debt in relation to its resilience, while the second applied descriptive characteristics of businesses, including type of business, size, age, and location. The dependent variable was binary, with 0 indicating less resilient businesses and 1 indicating resilient ones. The results for the first model are in Table 6.

The logistic equation can be interpreted as follows: A 1% increase in debt resulted in a 0.001 reduction in the logarithmic odds of a business being considered resilient. Based on Exp (β) = 0.999, a 1% increase in debt corresponded to a slight decrease in the odds of being classified as resilient. The p-value of 0.057 indicated that the effect was not statistically significant at the 5% level but reached significance at the 10% level. Therefore, at a 90% confidence interval, a more rapid increase in debt tended to slightly reduce the likelihood that a business would be considered resilient. Cox and Snell R^2 = 0.006 and Nagelkerke R^2 = 0.009 coefficients demonstrated low explanatory power, as the model accounted for only 0.6% to 0.9% of the variance in classifying businesses as resilient. This suggested that debt growth was not a strong predictor of organizational resilience and that other factors should be considered.

In the second model, we examined the impact of basic characteristics of tourism businesses (age, type, size, and location) on the probability of being classified as resilient. The results indicated that the age of the business had a statistically significant negative impact (β = -0.038; sig. = 0.025). This meant that with each additional year of the business's existence, its chance of being classified as resilient decreased by approximately 3.7% (Exp (β) = 0.963). Although the Mann-Whitney U test did not identify age as a significant factor, the multivariate logistic regression shows age is significant (p=0.025) once other organizational variables are controlled. This indicates that a business's age affects its resilience more clearly when viewed within its broader structural context (Table 7).

The number of employees had a significant positive impact on the probability of classifying tourism businesses as resilient (β = 0.416; sig. < 0.001). Exp (β) = 1.516 indicated that businesses with a larger number of employees had a 51.6% higher probability of being classified as resilient compared to smaller businesses.

Restaurant services and tour operators/travel agents had a 21.5% lower chance of being classified as resilient compared to the accommodation services (reference group), with Exp (β) = 0.785. Although this result was not statistically significant at the 5% level, it suggested a potential vulnerability at the 10% level during challenges such as the pandemic. The location of tourism businesses did not have a significant impact on their classification as resilient, indicating that the region of operation was not a key factor. The model determination coefficients, Cox and Snell R^2 = 0.043 and Nagelkerke R^2 = 0.064, indicated that it explained little of the variability. However, factors such as age, size, and type of business influenced the probability of resilience.

The results of the second regression model were used to construct the survival analysis using the Kaplan-Meier curve, with business age as the time variable and event (binary variable) indicating business resilience (1 = resilient, 0 = less resilient). The first survival analysis used size as a factor that influenced the probability of business survival. The second comparison examined business types, including accommodation, restaurants, and tour operators/travel agents. The purpose was to understand the impact of these factors on the long-term resilience of tourism businesses.

The logarithmic rank test (Mantel-Cox) showed significant differences in resilience based on employee numbers (chi-square = 8.392, p < 0.000) and business types (chi-square = 22.530, p < 0.000), indicating that size and type influenced business resilience during the pandemic.

The Kaplan-Meier survival curve (Figure 2) shows that the likelihood of businesses being resilient during COVID-19 decreased as the number of years on the market increased. Furthermore, tourism businesses with more employees were more resilient to pandemic impacts (left curve).

Table 6: First binary logistic regression model

Factors	Beta coefficient (unstandardized β)	Exp (β)	Sig.	Significance level of 0.05 and 0.10
Growth rate of business debt (x_1)	-0.001	0.999	0.057	Sig. < 0.10 (α)
Constant	1.102	3.011	0.000	Sig. < 0.05 (α)
Cox and Snell R^2 = 0.006 Nagelkerke R^2 = 0.009		logit(p) = 1.10 – 0.001x_1		

Source: authors

Table 7: Second binary logistic regression model

Factors	Beta coefficient (unstandardized β)	Exp (β)	Sig.	Significance level of 0.05 and 0.10
Age (x_1)	-0.038	0.963	0.025	Sig. < 0.05 (α)
Type (x_2)	-0.242	0.785	0.080	Sig. < 0.10 (α)
Size (x_3)	0.416	1.516	0.000	Sig. < 0.05 (α)
Location	-0.036	0.965	0.386	Sig. > 0.05 (α)
Constant	1.671	5.318	0.002	Sig. < 0.05 (α)
Cox and Snell R^2 = 0.043 Nagelkerke R^2 = 0.064	$\text{logit}(p) = 1.67 - 0.038x_1 - 0.242x_2 + 0.416x_3$			

Source: authors

Table 8: Overall comparisons

	Age			Type of tourism business		
Log-rank (Mantel-Cox)	**Chi-Square**	**df**	**Sig.**	**Chi-Square**	**df**	**Sig.**
	8.392	4	0.000	22.530	2	0.000

Source: authors

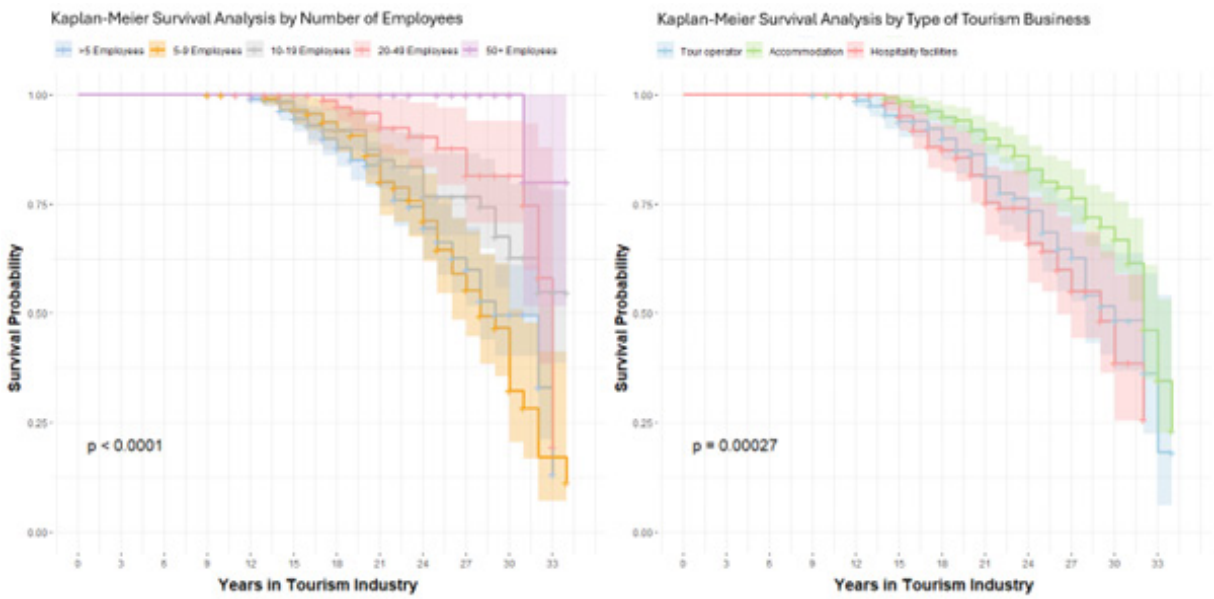

Figure 2: Kaplan-Meier survival curves by business size and type
Source: Authors

However, when examining the type of tourism business (right curve), the results of the Kaplan-Meier curve showed that the accommodation facilities were more resilient compared to restaurants and travel agencies. These findings confirmed that the size and type of the business significantly influence its resilience during the pandemic.

4.3 Semi-structured interviews with less resilient tourism businesses

To supplement the findings, we contacted selected businesses from the initial group that were perceived as less resilient. None of the businesses had to shut down their operations completely during the pandemic. However, all reported having to make significant changes in the way they usually conduct business. Respondent B2 stated: "Our operations were heavily influenced by government measures, which were often poorly communicated. We had to improvise and adapt to new rules daily."

According to the respondents, the key to survival was adapting to customer needs and exploring financial solutions to sustain their business. In terms of product innovation, hospitality businesses expanded their services, for example, to include food delivery. They also launched various events to increase sales, such as campaigns and customer-oriented activities, distributed advertising flyers to inform customers about new offers and increased their presence on social networks. Businesses also tried to use the downtime during forced closures effectively. Some took the opportunity to renovate their interiors or perform minor renovations. All respondents reported a sharp drop in sales. In line with that, respondent B7 expressed, "Not only were we forced to close, but we also had to cancel all events, such as weddings and parties, which are our major sources of income".

Travel agencies were particularly affected. They faced two groups of clients: those who were currently travelling or had scheduled trips that were cancelled but had already been paid for, and those who had paid deposits, primarily for summer vacations. Respondent B10 noted: "Without state assistance, the situation would have been devastating for us." Therefore, government support was crucial to prevent the collapse of these businesses.

The decrease in sales had a significant impact on daily operations. To reduce costs, tourism businesses optimized their inventory to minimize additional expenses and attempted to renegotiate their rent. Respondents generally spoke positively about their landlords. Additionally, tourism businesses used available government aid programs. However, personnel retention still posed a difficult challenge, as Respondent B4 stated: "Unfortunately, we prioritized keeping our full-time employees. All temporary staff had to be let go. The roles were combined: employees worked as waiters, suppliers, and delivery drivers; they did anything necessary." Respondents also sought to postpone loan repayments and negotiate delayed payments with their suppliers.

Furthermore, some had to reduce employee wages to remain operational. In terms of consumers, businesses spoke positively about customer behavior. As respondent B1 noted, "Customers supported us by continuing to place regular orders, doing what they could to help us survive."

When asked to reflect on their actions and decisions, respondents said that they made the best choices they could under the circumstances and that they do not regret them. As a result, respondent B8 concluded, "Could we have done anything better? It is hard to say under the circumstances, but we have no regrets."

5 Discussion and conclusion

This paper analyzed the factors influencing the organizational resilience of tourism businesses during the COVID-19 crisis and the measures adopted by less resilient businesses.

While many existing studies examine organizational resilience of tourism businesses through surveys and interviews (e. g., Neise et al., 2021; Sobaih et al., 2021), they often rely on subjective perceptions rather than objective evidence. This creates a gap in the literature, as there is limited research based on actual company data that could offer a more accurate understanding of resilience in tourism businesses (Saad et al., 2021). To address this gap, the present study uses secondary company data to identify resilient and less resilient businesses and to analyze the factors that contribute to resilience more objectively. Furthermore, this paper distinguishes itself by employing a mixed-method approach that combines company data analysis with insights from tourism managers on organizational resilience.

In terms of factors, statistically significant differences were found in economic indicators, particularly debt and revenue. Less resilient businesses experienced faster increases in debt and slower revenue growth during the pandemic, suggesting that businesses with faster debt growth may be less resilient (Neise et al., 2021). Revenue trends also highlighted that less resilient businesses saw significant declines in 2020 and 2021, with only a partial recovery in 2022. In contrast, more resilient businesses not only recovered but exceeded pre-pandemic revenue levels by 2022. These businesses also tended to have more employees, supporting the assumption that larger businesses adapted better to pandemic conditions (Ntounis et al., 2022).

To further explore resilience factors, two regression models were developed. The first examined the impact of business debt, revealing that a 1% increase in debt slightly reduced the probability of being classified as resilient,

although the model's explanatory power was low. The second model evaluated descriptive characteristics, including type of business, size, age, and location. It was found that older businesses had a lower probability of resilience, while those with more employees were more likely to be resilient. These findings challenge earlier assumptions that older businesses are inherently more resilient (e.g., Türkcan and Erkuş-Öztürk, 2020), aligning instead with Hadjielias et al. (2022), who observed that younger businesses often showed greater adaptability and agility due to fewer structural constraints. Businesses that are older and larger might experience a slower recovery following disruptions (Nguyen et al., 2022). This may also be related to higher innovation rates among younger businesses during the pandemic (Lee et al., 2023).

Regarding business type, restaurant services and tour operators/travel agents were found to be less resilient than accommodation services. These results contradict the findings of Sobaih et al. (2021), who indicated that restaurants adapted better to the pandemic than hotels. This can be due to a country-specific factor (Egypt) and the method used, which was based on a questionnaire survey. Finally, survival analysis using the Kaplan-Meier curve confirmed that businesses with more employees and those in accommodation services were more resilient. Survival analysis also confirmed results in terms of business age. The location did not have a statistical impact.

With these results, we can answer the first RQ: What factors have a positive impact on tourism businesses to be considered resilient? Tourism businesses were more likely to be classified as resilient if they had more employees, lower debt growth, and were younger. Accommodation services were more resilient than restaurants and travel agencies.

Based on semi-structured interviews with managers of less resilient tourism businesses, we can conclude that these businesses most often implemented the following measures: adapting services to new market needs, temporary closure, dismissing part-time employees, and negotiating new terms with banks, landlords, and suppliers. These results also provide an answer to the second RQ. Furthermore, the same conclusions are presented by Lesáková et al. (2022), who also supplement the measures aimed at minimizing losses by investing reserves and reassigning some employees to part-time workers.

The broader implications suggest that financial performance is vital to the organizational resilience of tourism businesses. Sector-specific support helps mitigate crises such as COVID-19. Policymakers should consider these factors to support a stronger and more adaptable tourism sector. Theoretical contributions from this research improve the understanding of organizational resilience by identifying factors that affect tourism businesses, highlighting the importance of factors such as size, age, debt, and financial performance. Practical contributions are based on findings to support the resilience of tourism businesses by their financial performance while considering sector-specific characteristics. Tourism stakeholders must recognize the factors that may compromise the ability of the sector to withstand future disturbances. Furthermore, tourism businesses' measures to cope with crises should be adequately strengthened. Therefore, policymakers should craft targeted support for less resilient tourism businesses to ensure their survival.

Several limitations of the study can be identified. The study focuses solely on Slovakian tourism businesses, which may limit the generalizability of the findings to other countries or regions. Furthermore, the study did not include all possible influencing factors. Other performance data and external factors can provide additional insight into organizational resilience. For example, the study found that although state aid was influential, it was largely uniform across the sector and therefore not a distinguishing variable in our business-level models. Also, although the 90% revenue recovery threshold offers a clear benchmark consistent with engineering resilience, its binary structure can obscure more nuanced variations in recovery performance. Future research could use a continuous measure, such as exact revenue regained, to better capture nuanced levels of organizational endurance and bouncing forward. Lastly, the lower explanatory power of logistic models suggests limited predictive capacity and omitted variable bias. However, in social science research and studies involving complex organizational behavior, low R2 values are common and often acceptable, since the primary goal of binary logistic regression is frequently to identify significant predictors and their directions of influence rather than to achieve high predictive accuracy (Weisberg, 2014).

Therefore, future research should include longitudinal studies on the effects of the pandemic and other crises on tourism businesses and their recovery. Analyzing resilience factors in various subsectors can lead to tailored recommendations. Comparative studies in countries could identify universal and region-specific resilience factors to enhance generalizability. Furthermore, studying technological adaptation and innovation to improve business resilience during crises can provide valuable insights. Addressing these areas will deepen the understanding of organizational resilience in the tourism sector.

In conclusion, this study examined the factors that impact organizational resilience of Slovakian tourism businesses during the COVID-19 pandemic, with an emphasis on sector-specific characteristics. It is notable for its mixed-method approach, which integrates resilience research through company data and insights from tourism managers. Tourism businesses were more resilient when they were larger and younger, with accommodation services outperforming restaurants and travel agencies. Financially, rapid debt growth emerges as a key vulnerability: although only significant at 10% level ($p=0.057$), it is a

meaningful indicator of lower crisis resilience. Less resilient businesses often survived by adapting services, temporarily closing, cutting staff, and renegotiating financial terms. Overall, organizational size and age appear to be important predictors of recovery, but stakeholders must also monitor debt accumulation as a critical risk to future resilience.

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