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DIGITALIZATION AND CRISIS ADAPTATION OF SMALL AND MEDIUM-SIZED ENTERPRISES: EVIDENCE FROM CZECH ENTERPRISES DURING THE COVID-19 PANDEMIC

Romana Kušnirová[1], Milan Talíř[2], Daniel Chamrada[3], Klaudia Ihnačáková[4], Ján Dobrovič[5]

[1] Ing. PhD., Institute of Technology and Business in České Budějovice, Czech Republic, E-mail address: 4698@mail.vstecb.cz

[2] Ing., Faculty of Business and Management, Brno University of Technology, Czech Republi, E-mail address: talir@mail.vstecb.cz

[3] Ing., Faculty of Operation and Economics of Transport and Communications, University of Žilina, Slovakia, E-mail address: chamrada@mail.vstecb.cz

[4] Ing., Department of General Competencies, University of Veterinary Medicine and Pharmacy, Slovakia, E-mail address: klaudia.ihnacakova@uvlf.sk

[5] Doc. Ing., University of VŠTE in Prešov, Slovakia, E-mail address: jan.dobrovic@unipo.sk

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Abstract
The COVID-19 pandemic created an urgent managerial problem for small and medium-sized enterprises, as firms had to maintain business continuity under operational restrictions, demand instability, supply-chain disruption and pressure to move activities online. The aim of this paper is to analyse how selected crisis-response strategies were associated with the adaptation of Czech SMEs during the pandemic, with particular attention to digitalization, online transition and firm market tenure. The study is based on a quantitative survey of 251 Czech enterprises collected in 2022-2023 within a research project focused on digitalization and business process management. Correlation analysis, logistic regression, Pearson's chi-square test and analysis of variance were applied. The results show that firms with longer market tenure achieved higher adaptation scores, although the categorical relationship between tenure and adaptation was not statistically significant. Analysis of variance provided stronger support for the role of accumulated experience, established processes and institutional memory. Logistic regression confirmed that moving activities online was the only statistically significant predictor of accelerated digitalization (OR = 2.827; p = 0.0071). The study interprets digitalization as a managerial and organizational adaptation mechanism. The practical output is a five-step framework for digital crisis adaptation in SMEs.

Keywords: *Business Continuity, Crisis Management, Crisis Scenario, Dynamic Capabilities, Managerial Learning, Online Transition, Organizational Resilience, Risk Management.*

JEL Codes: *M10; M15; O32; L26.*

Introduction

The COVID-19 pandemic represented an extraordinary stress situation for small and medium-sized enterprises (SMEs). Firms had to respond in a short period of time to operational restrictions, changes in demand, supply-chain disruptions, customer uncertainty and the need to move part of their activities into the online environment. This situation showed that traditional crisis planning based only on predefined scenarios may not be sufficient in rapidly changing conditions. In such an environment, the ability to continuously assess risks, work with data, adjust processes and use digital tools as part of a broader adaptation strategy becomes essential. This article builds on the conference paper Proposal for the implementation of digitalization in the creation of crisis scenarios for SMEs (Kušnirová et al., 2025), which focused primarily on a procedure for implementing digitalization in crisis scenario development. The present journal version follows that research but narrows and deepens it. The main attention is paid to digitalization as part of crisis adaptation and digital resilience in SMEs. The article therefore does not repeat the original conference text, but uses its starting points for a

new, more compact empirical interpretation and for a redesigned practical framework.

During the pandemic, digitalization became one of the main tools for maintaining operational continuity. However, it was not only a matter of introducing individual technologies, such as online communication platforms, cloud solutions or digital marketing channels. What mattered was whether these tools became part of everyday processes, decision-making and crisis management. Firms that were able to link digital tools with organizational change had better prerequisites for a rapid response to the crisis. At the same time, the ability to adapt to a crisis situation can be expected to differ according to firm characteristics. One important factor is market tenure. Older firms may have experience from previous difficult periods, more stable relationships with customers and suppliers, established decision-making mechanisms and stronger institutional memory. On the other hand, younger firms may be more flexible and less burdened by rigid structures. The relationship between firm tenure, digitalization and crisis adaptation therefore requires empirical verification.

The main aim of this article is to analyse how selected crisis-response strategies were related to the adaptation of Czech SMEs during the COVID-19 pandemic, with particular emphasis on digitalization, the shift of activities into the online environment and firm market tenure. The partial aims are: (1) to evaluate whether firms with longer market tenure achieved a higher level of crisis adaptation, (2) to identify which crisis strategy increased the likelihood of accelerated digitalization, and (3) to transform the empirical findings into a concise framework that can be used by SME managers in future crisis situations. Building on the previous conference paper, the journal version therefore develops the topic more narrowly and analytically by connecting empirical testing with practical recommendations for digital crisis adaptation. The research question is: Are firms with longer market tenure better prepared to manage crisis situations than firms with shorter market tenure? This question leads to the first hypothesis:

H1: Firms with longer market tenures show a higher level of crisis adaptation than firms with shorter market tenures.

Because the previous paper identified digitalization and online transition as key elements of crisis response, the present journal version also formulates a second hypothesis:

H2: Moving business activities online increases the likelihood of accelerated digitalization during a crisis period.

Literature Review

Crisis management in small and medium-sized enterprises

Crisis management represents a set of managerial practices aimed at identifying potential threats, preparing an organization for extraordinary situations, minimizing the impacts of disruption and ensuring the restoration of normal operations. In SMEs, this area is particularly important because these firms usually have more limited financial, human and technological resources than large enterprises. At the same time, they are often more dependent on a smaller number of customers, suppliers or key employees. A crisis can therefore quickly threaten not only their performance, but also business continuity itself. Beyond the immediate restoration of operations, crisis management in SMEs is also connected with integrated management systems, corporate risk management and the ability to coordinate resources across the organization. Daneshjo et al. (2021) emphasize the link between integrated management systems and corporate risk management, while Dancheva et al. (2019) underline the relevance of process redesign and reengineering as a modern managerial strategy. In this sense, crisis preparedness is not only a defensive activity, but also a managerial capability that enables firms to reorganize processes and resources under pressure (Kollmann et al., 2023).

In the literature, crisis management is associated primarily with prevention, preparedness, response and recovery. Kozhukhivska et al. (2019) point out that the effectiveness of crisis management depends on a firm's ability to identify risk factors in time and set

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appropriate measures. Similarly, Bsoul-Kopowska (2020) emphasizes the importance of systematic crisis planning and clearly defined responsibilities. Abdel-Latif et al. (2022) add that crisis management must be understood as a dynamic process because crises often develop faster than the organization's original plans. Eriksson and Hallberg (2022) also note that organizations can learn from crises if they are able to evaluate their responses retrospectively and transfer the acquired knowledge into future procedures.

Crisis response is also closely linked to communication and stakeholder coordination. Haupt and Azevedo (2021) show that crisis communication planning requires clearly defined roles and procedures, and Haupt (2021) emphasizes the use of crisis communication strategies in emergency management. Wodak (2021) further highlights that crisis communication during COVID-19 was not only a technical issue, but also a matter of trust, clarity and coordination among actors. From a managerial perspective, perceived crisis-management effectiveness is therefore influenced by the ability of firms to communicate decisions, protect employees and customers and maintain reputation (Dwiedienawati et al., 2021; Permatasari and Mahyuni, 2022).

The COVID-19 pandemic significantly changed the way firms perceive crisis preparedness. While crisis scenarios were previously often associated with partial operational incidents, during the pandemic firms had to face long-term and systemic disruption. Burhan et al. (2021) show that SMEs during the pandemic had to combine immediate survival measures with longer-term adaptation. Fasth et al. (2022) emphasize that crisis management in SMEs is not only a formal plan, but primarily a practical everyday activity of management. Similarly, Alves et al. (2020) state that firm survival during the pandemic depended on a combination of flexibility, innovation, customer relationships and the ability to quickly adjust the business model.

Resilience-oriented research also suggests that crisis management must be continuously reviewed and adjusted. Cantelmi et al. (2022) point out that learning from COVID-19 can strengthen resilience in emergency management, while Sehnem et al. (2021) emphasizes the importance of adaptation capacity in crisis scenarios. These studies support the view that crisis preparedness is not a one-time plan, but an iterative process in which firms learn from disruption and gradually improve their response mechanisms.

Digitalization as a tool of crisis adaptation

In the current business environment, digitalization is associated with process modernization, the automation of routine activities, more effective use of data and improved communication with customers and employees. Sandberg et al. (2020) show that digitalization changes the logic of organizing business processes and enables new forms of coordination. Rinderle-Ma and Mangler (2021) emphasize the importance of process automation, while Lievano-Martínez et al. (2022) point to the growing role of intelligent process automation in industrial environments. Loukiala et al. (2021) add that working with data and digital platforms increases the ability of organizations to make decisions based on available information. Digitalization also influences how firms collect, process and use information for decision-making. Niu et al. (2021) show that business intelligence and big data analytics can support organizational decision-making, while Sawng et al. (2018) demonstrate that technology adoption can be related to company performance. In the SME context, these findings indicate that digital tools are valuable not only when they automate activities, but also when they improve the quality and speed of managerial decisions.

In the context of crisis, however, digitalization acquires a different meaning. It is not only about increasing efficiency, but also about maintaining operability under conditions of restrictions, uncertainty and disruption of normal processes. During the COVID-19 pandemic, digital tools became necessary for remote work, online communication, e-commerce, digital marketing, customer relationship management and internal coordination. Crespo et al. (2023) show that digitalization and the ability to innovate were important for maintaining firm performance during crisis periods. Rupeika-Apoga et al. (2022)

further confirm that digital orientation and digital capabilities of SMEs influence the extent of digital transformation during the pandemic. Evidence from the Czech business environment also points to the importance of digitalization for firm performance during the pandemic. Talíř and Chytilová (2024) show that digitalization influenced company performance during COVID-19, while Chytilová and Talíř (2024) analyse how firms' performance and behaviour changed in response to the crisis. In addition, McLean and Steyn (2023) describe the COVID-enforced adoption of technology among reluctant entrepreneurial businesses, which supports the idea that crisis pressure can accelerate digital transition even in firms that were previously hesitant.

Current research also shows that digitalization is closely linked to organizational resilience. Ahamed (2024), in a systematic review, states that digital transformation can be a means of strengthening SME resilience if it is linked to appropriate organizational capabilities. Awad and Martín-Rojas (2024) empirically examine the influence of digital transformation on organizational resilience and emphasize the mediating role of innovation and organizational learning. Őri et al. (2024) point out that digitalization in crisis can have a self-reinforcing character: firms with higher resilience are able to use digitalization more effectively and, at the same time, digitalization further strengthens their resilience. These findings support the assumption that digitalization should not be assessed in isolation, but as part of a broader system of firm capabilities.

Barriers to digitalization in small and medium-sized enterprises

Although digitalization offers many opportunities, SMEs often face significant barriers. The most frequently mentioned obstacles include a lack of financial resources, limited digital competencies among employees, low technological readiness, uncertainty about the return on investment and resistance to change. Kallmuenzer et al. (2024) note that the adoption of digitalization in SMEs depends not only on the availability of technologies, but also on the ability of management to integrate digital tools into business strategy. Huebeck (2024) emphasizes the importance of dynamic managerial capabilities because managers decide whether digital tools will be perceived as a strategic opportunity or as a risky and costly change.

A specific barrier is managerial digital reluctance or digital hesitation. Saka, Hormiga and Valls-Pasola (2024) point out that during a crisis the problem may not only be a lack of technologies, but also managers' reluctance to use digitalization as part of crisis response. This reluctance may be associated with fear of an unfamiliar environment, low trust in digital tools or the belief that traditional procedures are sufficient. In this context, Czakon et al. (2023) draw attention to the problem of strategic myopia, where firms underestimate changes in the environment and respond late to new threats. Newer studies focused on successful digital transformation in SMEs emphasize that digitalization should be gradual, strategically aligned and accompanied by learning. A systematic review of SME digital transformation success shows that firms should start from their initial level, take constraints into account and proceed incrementally, rather than copying complex digital solutions used by large firms (Sagala and Őri, 2024). These conclusions are important especially in a crisis period when firms do not have enough time or resources for extensive transformation projects and must choose solutions that are quickly feasible and organizationally manageable.

Digital resilience, organizational learning and firm market tenure

Digital resilience can be understood as a firm's ability to use digital technologies, data, processes and knowledge to manage disruption, continue key activities and adapt to new conditions. This concept links digitalization, crisis management and organizational learning. A digitally resilient firm does not perceive technologies only as tools of operational efficiency, but as means for faster decision-making, flexible communication and business model adaptation. This interpretation corresponds to the current understanding of digitalization as a factor of organizational resilience, in which digital transformation is reflected not only in

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technological modernization, but also in the firm's ability to change processes, decision-making and value creation (Rupeika-Apoga et al., 2022; Crespo et al., 2023; Ahamed, 2024). An important component of digital resilience is organizational learning. Eriksson and Hallberg (2022) emphasize that crises can act as a source of transformative learning if the firm is able to evaluate which procedures worked and which need to be changed. Awad and Martín-Rojas (2024) link digital transformation with innovation and learning, and these mechanisms may explain why digitalization supports resilience only in some firms. Similarly, Őri et al. (2024) note that the relationship between digitalization and resilience may be two-way: more resilient firms are better able to use digital technologies and, at the same time, can further strengthen their resilience through digitalization. If a firm introduces a digital tool but does not change related processes, competencies and decision-making, its crisis resilience may not increase significantly (Kallmuenzer et al., 2024).

Firm market tenure may be one factor that influences the ability to learn and adapt. Firms with a longer history may have institutional memory, experience from previous market fluctuations, more stable relationships with customers and suppliers and more developed internal routines. These factors can support faster decision-making and better management of uncertainty, which is consistent with the view of crisis as a process in which experience, prior knowledge and the ability of an organization to reflect on its own procedures are applied (Eriksson and Hallberg, 2022; Fasth et al., 2022). On the other hand, longer existence may also be associated with rigidity, resistance to change and reliance on established procedures. It cannot therefore be automatically assumed that older firms will always be more adaptable; what matters is whether they can combine experience with willingness to innovate and use digital tools as part of change (Czakon et al., 2023; Saka et al., 2024).

The relationship between experience and adaptability is also consistent with research on adaptation capacity. Sehnem et al. (2021) argue that firms' ability to adapt in crisis scenarios depends on their capacity to mobilize resources, learn from the situation and redesign practices. Older firms may benefit from accumulated experience, but this benefit becomes relevant only when institutional memory is transformed into flexible managerial action rather than organizational inertia. The literature therefore increasingly emphasizes the connection between experience, dynamic capabilities and digital transformation. Dynamic capabilities enable firms to sense changes in the environment, seize new opportunities and reconfigure resources. In a crisis period, these capabilities are manifested, for example, by rapid movement into the online environment, changes in the offer, work reorganization or the use of digital tools for communication and decision-making (Huebeck, 2024). From this perspective, firms with longer market tenure may have an advantage only if their experience is not passive, but is reflected in the ability to change processes, develop digital competencies and adapt the business model to new conditions (Rupeika-Apoga et al., 2022; Awad and Martín-Rojas, 2024; Sagala and Őri, 2024).

The theoretical basis of the study is therefore formed by the intersection of three perspectives: crisis management, digital transformation and dynamic capabilities. Crisis management explains why firms need preparedness, response and recovery mechanisms; digital transformation explains how technologies can change communication, coordination and value delivery; and dynamic capabilities explain why some firms are able to sense disruption, seize digital opportunities and reconfigure resources faster than others. This combined theoretical view is important because it prevents the interpretation of digitalization as a purely technical change and frames it instead as a managerial capability that supports resilience only when it is embedded in processes, competencies and learning.

Basis for empirical verification

The above findings suggest that crisis adaptation in SMEs results from the interaction of several factors. These include crisis preparedness, managerial experience, digital capabilities, willingness to change established processes and the ability to move part of business activities into

the online environment. The COVID-19 pandemic created a situation in which these relationships could be observed very intensively because firms were exposed to strong pressure for rapid response. Based on the theoretical background, it can be assumed that firms with longer market tenure will show a higher level of crisis adaptation because they can use experience, more stable processes and institutional memory. It can also be assumed that online transition will be significantly related to accelerated digitalization because it represents a concrete manifestation of the fact that digitalization was not only a declared intention but became part of the operational response to the crisis. These assumptions lead to two hypotheses:

This theoretical framing also explains the logic of the two hypotheses. Market tenure is used as an indicator of accumulated experience and institutional memory, while online transition is used as a concrete behavioural expression of digitalization during crisis. The hypotheses therefore do not test digitalization as a broad declaration, but focus on observable crisis-response behaviour that can be empirically evaluated.

H1: Firms with longer market tenures show a higher level of crisis adaptation than firms with shorter market tenures.

H2: Moving business activities online increases the likelihood of accelerated digitalization during a crisis period.

Methodology and research methods (for research and theoretical papers)

The research was based on a quantitative survey of SMEs operating in the Czech Republic. The data were collected in 2022-2023 within a research project focused on digitalization and business process management. From the initial sample of 571 enterprises, a final analytical sample of 251 enterprises was created after checking the completeness and consistency of responses. The research included enterprises that were active during the COVID-19 pandemic and were able to provide information on their crisis responses, adaptation level and use of selected managerial strategies. The questionnaire focused mainly on firm market tenure, the level of adaptation during the pandemic and specific measures used in response to the crisis period. Market tenure was divided into four categories: 0-1 year, 2-5 years, 6-10 years and 11 years or more. Adaptation level was assessed in three categories: low, medium and high. The analysed strategies included simplification of the organizational structure and optimization of the number of employees, more efficient work organization, changes in product or service offerings, accelerated digitalization, moving activities online and increased marketing support.

In line with the abstract, four analytical procedures were used in the empirical part. Correlation analysis was used to identify links between individual crisis strategies. Logistic regression was used to assess which strategies increased the probability of accelerated digitalization. Pearson's chi-square test was used to verify the relationship between categories of firm market tenure and categories of adaptation level. Analysis of variance was subsequently used to assess differences in adaptation performance between groups of firms according to market tenure. All methods mentioned in the abstract are therefore further developed in the methodology and results sections. Methodologically, the article is based on the same data foundation as the previous conference paper, but its processing is oriented toward journal-style interpretation of results and a more practical application of findings. The aim is therefore not only to repeat the original proposal for implementing digitalization, but to link empirical findings with a shorter and more usable framework for digital crisis adaptation. The results are interpreted as empirical associations and predictors, not as direct evidence of causal effects.

Results

Relationship between firm market tenure and crisis adaptation level

The first part of the analysis focused on the relationship between firm market tenure and crisis adaptation level. The results are summarized in Figure 1. The graph shows the distribution of firms across three adaptation levels: low, medium and high. In each adaptation category, firms are further divided according to market tenure.

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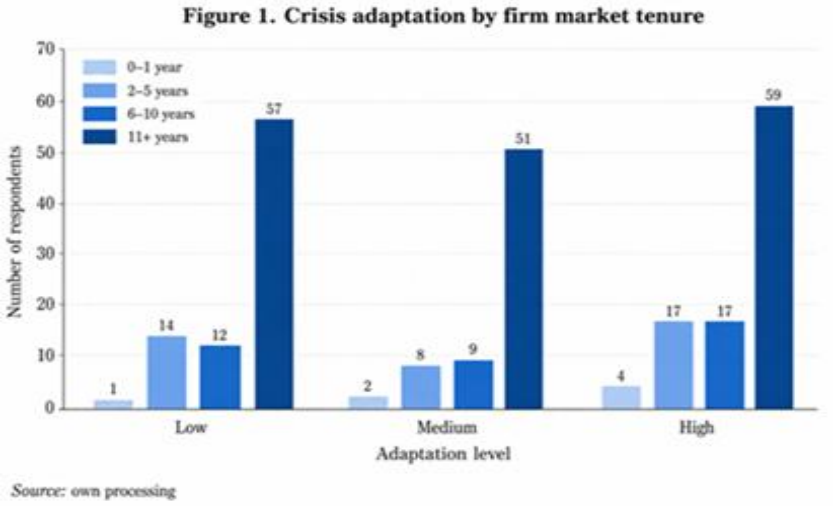

Figure 1. Crisis adaptation by firm market tenure

**Sources: systematized by the authors.*

The results show that firms with market tenure of 11 years or more formed the strongest group in the sample. In the high adaptation category, there were 59 firms with market tenure of 11 years or more, 17 firms in the 6-10 years category, 17 firms in the 2-5 years category and 4 firms in the 0-1 year category. In the medium adaptation category, there were 51 firms with market tenure of 11 years or more, 9 firms in the 6-10 years category, 8 firms in the 2-5 years category and 2 firms in the 0-1 year category. In the low adaptation category, there were 57 firms with market tenure of 11 years or more, 12 firms in the 6-10 years category, 14 firms in the 2-5 years category and 1 firm in the 0-1 year category. The frequencies must be interpreted carefully because they also reflect the structure of the research sample. Nevertheless, the results indicate that firms with longer market tenure showed a higher ability to adapt. This trend can be explained by the fact that longer-established firms could draw on experience from previous periods of uncertainty, more stable internal processes, established relationships with customers and suppliers and stronger institutional memory. These factors may have helped management identify key risks more quickly and adopt appropriate crisis measures.

Correlation analysis of crisis strategies

The second part of the analysis examined the relationships between crisis strategies. The correlation matrix is shown in Table 1.

Table 1. Correlation results

	A1	A2	A3	A4	A5	A6
A1	1.000	0.107	-0.012	-0.055	-0.096	-0.088
A2	0.107	1.000	-0.079	-0.094	0.072	-0.202
A3	-0.012	-0.079	1.000	-0.092	-0.095	0.094
A4	-0.055	-0.094	-0.092	1.000	0.225	0.087
A5	-0.096	0.072	-0.095	0.225	1.000	0.077
A6	-0.088	-0.202	0.094	0.087	0.077	1.000

Note: A1 - simplification of organizational structure / employee-number optimization; A2 - more efficient work organization; A3 - change in product or service offerings; A4 - accelerated digitalization; A5 - moving activities online; A6 - increased marketing support / discount offers.

**Sources: systematized by the authors.*

The correlation analysis showed that most relationships between the monitored strategies were rather weak. The strongest positive relationship was found between accelerated digitalization (A4) and moving activities online (A5), where the correlation coefficient reached 0.225. Although this is not a strong correlation, it is an important indicator in relation to the research

question. It suggests that digitalization during the pandemic was not a separate and isolated step, but was often related to a specific operational need to move communication, sales, administration or other activities into the online environment. The negative relationship between more efficient work organization (A2) and increased marketing support (A6), with a correlation coefficient of -0.202, is also noteworthy. This result may indicate that some firms focused on internal stabilization during the crisis, while others chose a more active market response through marketing and discount offers. The correlation results therefore show that firms did not apply crisis strategies uniformly but chose different combinations of measures according to their situation, capacities and business model.

Logistic regression: predictors of accelerated digitalization

The third part of the results focused on which crisis strategies increased the probability of accelerated digitalization. Logistic regression was used for this purpose. The results are presented in Table 2 and visualized in Figure 2.

Table 2. Logistic regression results for accelerated digitalization

Strategy	95% CI lower	95% CI upper	Odds ratio	p-value
Const	0.1476	0.6141	0.3011	0.0010
Simplification of the organizational structure, optimization of the number of employees including management	0.3119	2.3878	0.8630	0.7766
More efficient work organization, shift setting, working from home	0.2818	1.3074	0.6070	0.2022
Change in product/service offerings	0.2307	1.5278	0.5936	0.2796
Moving activities online	1.3269	6.0232	2.8270	0.0071
Increased marketing support of the company, discount offers	0.5573	3.7211	1.4400	0.4515

**Sources: systematized by the authors.*

Table 2 presents the numerical values of the logistic regression while Figure 2 provides a graphical interpretation of the same results. The forest plot makes it easier to compare individual predictors because it shows both the odds ratios and their confidence intervals in relation to the reference value of 1. If the confidence interval crosses this value, the effect cannot be interpreted as statistically significant at the usual level. In the present model, moving activities online is the only predictor whose confidence interval remains entirely above 1, which visually confirms its specific role in accelerated digitalization

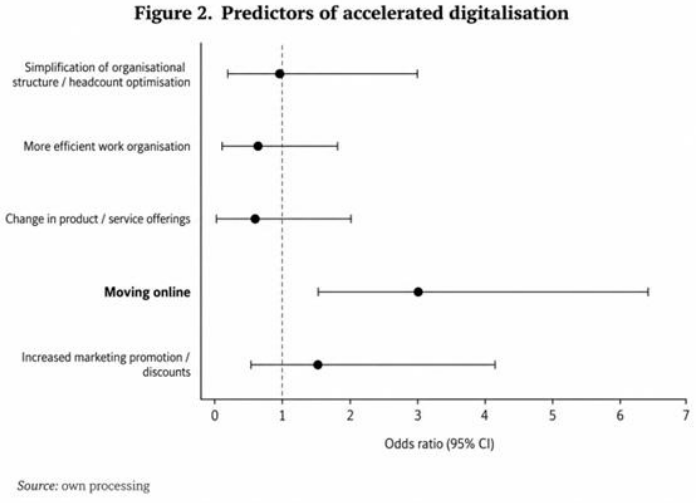

Figure 2. Predictors of accelerated digitalization

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Logistic regression confirmed that moving activities online was the only statistically significant predictor of accelerated digitalization. The odds ratio was 2.827 and the p-value was 0.0071. This means that firms that moved their activities online were almost three times more likely to accelerate digitalization than firms that did not apply this strategy. This result is important from an application perspective. It shows that digitalization was not primarily associated with a general effort to modernize the firm, but with the practical necessity of changing the way services, communication and work organization were provided. Moving activities online can therefore be understood as a trigger that encouraged firms to use digital tools more quickly and intensively.

The other strategies were not statistically significant. Simplification of the organizational structure had an odds ratio of 0.8630 and a p-value of 0.7766. More efficient work organization reached an odds ratio of 0.6070 and a p-value of 0.2022. Changes in product or service offerings had an odds ratio of 0.5936 and a p-value of 0.2796. Increased marketing support had an odds ratio of 1.4400, but the p-value of 0.4515 does not allow this relationship to be considered statistically significant. These results indicate that the strategies may have been practically important for firms, but by themselves did not increase the likelihood of accelerated digitalization as strongly as online transition.

Pearson's chi-square test and analysis of variance

In the next part, the relationship between firm market tenure and crisis adaptation level was verified. Pearson's chi-square test was used to assess the relationship between categorical variables. The test result did not show a statistically significant relationship at the usual level of significance. The value $p = 0.165$ suggests that, with categorical classification, the dependence between firm market tenure and adaptation level was not sufficiently strong. This result does not mean that firm market tenure is irrelevant. Rather, it shows that the relationship between these variables is not simple and cannot be fully captured by a categorical test alone. Crisis adaptation is a complex phenomenon that may be influenced not only by firm age, but also by sector, size, managerial experience, resource availability and the level of digital readiness.

Analysis of variance provided stronger support for hypothesis H1. Differences between groups of firms according to market tenure were statistically significant and firms with longer market tenure showed higher adaptation scores. This result supports the interpretation that experience and longer presence on the market may be associated with a greater ability to manage crisis situations. The different results of the chi-square test and ANOVA also confirm that the relationship between tenure and adaptation must be interpreted carefully and on several levels. Overall, the results can be summarized as follows: hypothesis H1 is supported primarily by the results of analysis of variance, while the chi-square test provides a more cautious conclusion. Hypothesis H2 is supported by logistic regression, which demonstrated the significant role of online transition as a predictor of accelerated digitalization.

Table 3. Summary of empirical tests

Method	Purpose	Key result	Interpretation
Correlation analysis	Relationships among crisis strategies	A4-A5 r = 0.225	Digitalization was related mainly to moving activities online.
Logistic regression	Predictors of accelerated digitalization	Moving activities online: OR = 2.827, p = 0.0071	H2 supported.
Pearson's chi-square test	Categorical relationship between tenure and adaptation	p = 0.165	No statistically significant categorical dependence.
Analysis of variance	Differences in adaptation by market tenure	Significant group differences	H1 supported mainly by ANOVA.

**Sources: systematized by the authors.*

Discussion

The results show that crisis adaptation in SMEs does not arise from a single isolated strategy. It results from a combination of experience, the ability to recognize key threats, willingness to change processes and the practical use of digital tools. Firms with longer market tenure could draw on institutional memory, established procedures and more stable links with their environment. These factors may have strengthened their ability to manage uncertainty and respond more quickly to extraordinary situations. At the same time, the results show that experience alone is not sufficient. The key empirical finding is the importance of moving activities online. This result suggests that digitalization is effective in crisis management especially when it is linked to a real operational change. It is therefore not enough to introduce a single digital tool; what matters is whether digital technologies change the way the firm communicates, sells, manages work or makes decisions. Based on the results, the original broader implementation model was redesigned into a shorter five-step framework. The reason for the reduction was not to simplify the importance of digitalization, but to increase the practical usability of the model. The original seven-phase approach was suitable for a detailed description of the process; however, in crisis practice it may be too extensive and administratively demanding for SMEs. In crisis conditions, firms usually need a procedure that is fast, understandable, easy to communicate and directly connected with managerial decision-making.

The condensed five-step framework therefore combines related activities into broader and more practical blocks. Risk analysis and readiness assessment are combined into the step of mapping risks. Setting digitalization objectives is reformulated as setting a digital focus because firms in crisis often do not need an extensive strategy, but rather a clear decision about where to concentrate limited resources. Tool selection and process adjustment are integrated into workflow redesign, emphasizing that technologies must be aligned with the actual functioning of the firm. Online transition has a separate role because this element was shown in the empirical part to be a statistically significant predictor of accelerated digitalization. The final step, measurement and improvement, combines testing, feedback and continuous improvement into one practical process.

Figure 3. Five-step framework for digital crisis adaptation in SMEs

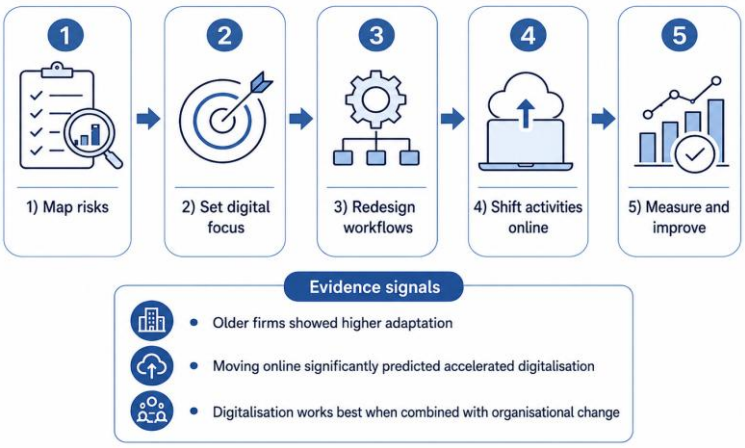

Figure 3. Five-step framework for digital crisis adaptation in SMEs

**Sources: systematized by the authors.*

Five-step framework for digital crisis adaptation

Step 1: Map risks - The firm first identifies the key risks that most threaten its operations, such as supplier failures, limited customer access, employee unavailability or communication disruptions. Step 2: Set digital focus - The firm then determines where digitalization can help

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most effectively, for example in online sales, customer communication, remote work or internal coordination. Step 3: Redesign workflows - Digital tools must be linked to business processes. This step ensures that digitalization changes every day work practices rather than remaining only a formal technological investment. Step 4: Shift activities online - The firm moves selected activities online, such as sales, customer communication, meetings or administration. This step is central because online transition was the strongest predictor of accelerated digitalization. Step 5: Measure and improve - The firm continuously evaluates whether the adopted digital measures improve stability, efficiency and adaptation, and adjusts them when needed. The five-step model offers a practical and flexible framework for SMEs. It helps firms identify priorities, connect digital tools with processes and use online transition as a concrete element of crisis adaptation.

Practical implications for SMEs and business-support institutions

The results can be applied in practice in several ways. First, SME managers can use the framework as a simple diagnostic tool when preparing crisis scenarios. Instead of starting with technology selection, they should first identify key operational risks and decide which processes must remain functional under disruption. Second, the finding that online transition significantly predicts accelerated digitalization suggests that firms should prepare basic online alternatives for sales, customer communication, internal meetings and administration before a crisis fully develops. Third, business-support institutions and policy makers can use the findings when designing support programmes for SMEs. Training and subsidies should not focus only on purchasing digital tools, but also on workflow redesign, managerial decision-making, employee competencies and continuous evaluation of adopted measures. From a teaching and managerial-development perspective, the framework can also be used as a practical checklist in courses focused on crisis management, digital transformation, business continuity and SME resilience. Its value lies in connecting empirical evidence with an understandable sequence of managerial steps that can be adapted to different sectors and firm sizes.

Conclusions

The article fulfilled its main aim by analysing the relationship between selected crisis-response strategies, firm market tenure and crisis adaptation in Czech SMEs during the COVID-19 pandemic. In relation to the first partial aim, the results showed that firms with longer market tenure displayed higher adaptation scores. This finding supports the interpretation that experience, established routines and institutional memory may strengthen crisis response, although the chi-square test showed that the categorical relationship was not statistically significant. In relation to the second partial aim, logistic regression confirmed that moving activities online was the only statistically significant predictor of accelerated digitalization. Hypothesis H1 is therefore supported mainly by the analysis of variance, while hypothesis H2 is supported by the logistic regression results.

The main scientific conclusion is that digitalization should be understood as a managerial and organizational adaptation mechanism rather than as an isolated technological investment. Its contribution to crisis management emerges when digital tools are connected with operational change, workflow redesign, managerial decision-making and organizational learning. The empirical results therefore extend the existing discussion on SME resilience by showing that online transition is a specific operational trigger through which digitalization becomes relevant in crisis conditions. The practical contribution of the article is the five-step framework for digital crisis adaptation, which builds on the previous paper Proposal for the implementation of digitalisation in the creation of crisis scenarios for SMEs (Kušnirová et al., 2025) but makes the model shorter, clearer and easier to use in SME practice. The framework includes mapping risks, setting a digital focus, redesigning workflows, shifting activities online and measuring and improving adopted measures. Its main benefit is that it links the empirical findings directly with managerial action and can support owners, managers,

teachers and business-support institutions in preparing SMEs for future crises.

Future research should verify this framework in different sectors and complement the quantitative results with qualitative insights from SME managers. Further studies should also examine the role of firm size, industry, digital readiness and managerial competencies, because these factors may influence whether experience becomes a source of adaptability or, conversely, a source of rigidity. Such research would make it possible to better understand how SMEs use the individual steps in real crisis practice and which factors support or hinder their digital crisis adaptation.

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