

# VPLIV PANDEMIJE COVID-19 NA DIGITALNO PREOBRAZBO MIKRO, MALIH IN SREDNJE VELIKIH PODJETIJ: PRELIMINARNI REZULTATI

MARJETA MAROLT, MIRJANA KLJAJIĆ BORŠTNAR,  
GREGOR LENART, DOROTEJA VIDMAR, ANDREJA  
PUCIHAR

Univerza v Mariboru, Fakulteta za organizacijske vede, Kranj, Slovenija  
marjeta.marolt@um.si, mirjana.kljajic@um.si, gregor.lenart@um.si,  
doroteja.vidmar@um.si, andreja.pucihar@um.si

**Povzetek** Pandemija Covid-19 je do neke mere prizadela vse industrije in sektorje. Pandemija je imela, podobno kot finančna kriza leta 2008, velik vpliv na poslovanje mikro, malih in srednje velikih podjetij (MSP). Večina MSP ima nizko stopnjo digitalne zrelosti, kar se je med pandemijo, ko so morala zaradi številnih omejitev uporabljati digitalno tehnologijo, izkazalo za glavno slabost. Zato nas je zanimalo, kako je pandemija Covid-19 vplivala na njihovo digitalno preobrazbo. Da bi pridobili čim bolj celovit vpogled, smo uporabili raziskovalni pristop, ki združuje kvalitativne in kvantitativne metode. Spoznanja pridobljena v kvalitativni fazi raziskave smo uporabili pri razvoju vprašalnika. Na podlagi analize zbranih podatkov predstavljamo preliminarna spoznanja ter podajamo priloženosti za nadaljnje raziskave.

## **Ključne besede:**

digitalna  
preobrazba,  
mikro,  
mala in  
srednje  
velika  
podjetja  
pandemija  
COVID-19

# THE IMPACT OF COVID-19 PANDEMIC ON DIGITAL TRANSFORMATION OF SMEs: PRELIMINARY FINDINGS

MARJETA MAROLT, MIRJANA KLJAJIĆ BORŠTNAR,  
GREGOR LENART, DOROTEJA VIDMAR, ANDREJA  
PUCIHAR

University of Maribor, Faculty of Organizational Sciences, Kranj, Slovenia  
marjeta.marolt@um.si, mirjana.kljajic@um.si, gregor.lenart@um.si,  
doroteja.vidmar@um.si, andreja.pucihar@um.si

**Abstract** The Covid-19 pandemic affected all industries and sectors to some extent. Similar to the financial crisis of 2008, it had a major impact on micro, small and medium-sized enterprises (SMEs). Most SMEs have a low level of digital maturity, which proved to be a significant weakness during the pandemic when they had to use digital technology due to a number of constraints. We were therefore interested in how the Covid-19 pandemic affected their digital transformation. In order to gain a comprehensive overview, we used a sequential mixed method research design. The insights gained in the qualitative phase of the research were used for questionnaire development. Based on analysis of the data collected from Slovenian SMEs, we present preliminary findings and provide opportunities for further research.

**Keywords:**  
digital  
transformation,  
micro,  
small and  
medium  
sized  
enterprises,  
COVID-19  
pandemic

## **1 Introduction**

The COVID-19 pandemic affected all sectors of the economy in 2020. Many businesses across the country experienced supply chain disruptions, a drop in demand for their products and services, a lack of inventory and different government restrictions. It is worth noting that not all businesses were equally affected by the COVID-19 pandemic. The most affected businesses were those in the service industries, especially tourism and hospitality (Fernandes, 2020). All events were cancelled, accommodation, museums, galleries, etc. were closed, and catering services, laundries, transport, etc. were also affected.

In addition to the industry, the size of the enterprise has also had an impact on its business performance. Larger enterprises were able to better withstand a shock such as the COVID-19 pandemic, as they tend to have more financial resources and can more easily obtain additional financing. In this respect, SMEs are much more vulnerable (Martin, Romero, & Wegner, 2019). Consequently, they need more time to return to business as usual after a crisis (Jeansson & Bredmar, 2019). This vulnerability became evident after the global crisis of 2008, when SMEs experienced a sharp drop in demand and found themselves in financial difficulties due to lower revenue (OECD, 2009).

The reports from different surveys in Europe show that SMEs have been hit hard by the COVID-19 pandemic. For example, 41% of SMEs in the UK have gone out of business in 2020 (FSB, 2020), in Italy 70% of SMEs report that they have been directly affected by the crisis, and in Germany as many as 50% of SMEs expect longer-term negative effects (Juergensen, Guimón, & Narula, 2020). According to the OECD (2020) report, the situation was similar in all European countries. SMEs have been affected to some extent by the COVID-19 pandemic, but little is known about the impact on different types of SMEs. Even less is known about how COVID-19 pandemic affected the digital transformation of SMEs, which lag behind large enterprises in the adoption of new digital technologies (OECD, 2021). Our aim was therefore to examine how the COVID-19 pandemic has affected SMEs digital transformation. Based on the quantitative data collected from Slovenian SMEs, we present preliminary findings and make suggestions for further research.

## 2 Theoretical background

SMEs are important contributors to job creation and global economic development. In 2020, more than 21 million SMEs were active in Europe. SMEs employed 65% of the world's people and together accounted for 53% of total gross social product (GDP) (European Commission, 2021). The short-term consequences caused by the closure of countries had a direct impact on the entire supply chain and consequently on SMEs. While some SMEs need to close their business for a longer period of time, other SMEs faced a number of challenges, such as material supply disruption, labour shortages, reduced demand and payment delays. These challenges resulted in financial and liquidity problems, as many were already operating within tight budgets and financial constraints before the crisis (Juergensen et al., 2020). Data for 2020 show that SMEs generated 7.6% less GDP and employment in SMEs fell by 1.7% (European Commission, 2021).

Enterprises are realising that digitalisation enables them to operate smoothly even in times of crisis, supporting key activities such as sales and marketing and boosting productivity within the enterprise (Hamburg, 2021). To ensure business continuity, smaller enterprises have started to use digital technology that they did not consider essential to their business before the COVID-19 pandemic (Ting, Carin, Dzau, & Wong, 2020). For example, they started to use online tools for meetings to enable regular communication between employees as well as with customers and other partners (Vaccaro, Getz, Cohen, Cole, & Donnally, 2020). The digital transformation in some smaller enterprises has also resulted in changes to their business models (Priyono, Moin, & Putri, 2020). Among others, enterprises have started to offer training and advice to customers via videoconferencing tools, and many enterprises have increased online sale.

SMEs that had already invested in digital technology in the past were able to better respond than those who were less digitally mature. The data also show that SMEs in the digital sector performed much better than SMEs in the non-digital sector. The various economic support programmes implemented by the Member States of the European Union have also led to a reduction in the number of bankruptcies (European Commission, 2021). Juergensen et al. (2020) find that the short-term consequences of the COVID-19 pandemic are common to all SMEs, while the long-term consequences differ between different types of SMEs.

### 3 Methodology

Together with researchers from Corvinus University in Hungary, we are investigating the impact of the COVID-19 pandemic on the digital transformation of SMEs. When we conducted a bilateral research proposal little was known about this topic. Therefore, we decided to use an exploratory sequential mixed-method research design. In order to gain more in-depth insights, the first part of our research approach involved conducting interviews with SMEs from both countries. The results were first analysed together for both countries and based on the findings we developed a research model and survey instrument.

Each country then separately distributed questionnaire to SMEs. To collect data in Slovenia we used online survey and sent it to 3000 SMEs. We obtained 155 responses from SMEs. 43% were small enterprises, followed by medium-sized (32%), and micro (24%) enterprises located in different Slovenian regions (Figure 1).

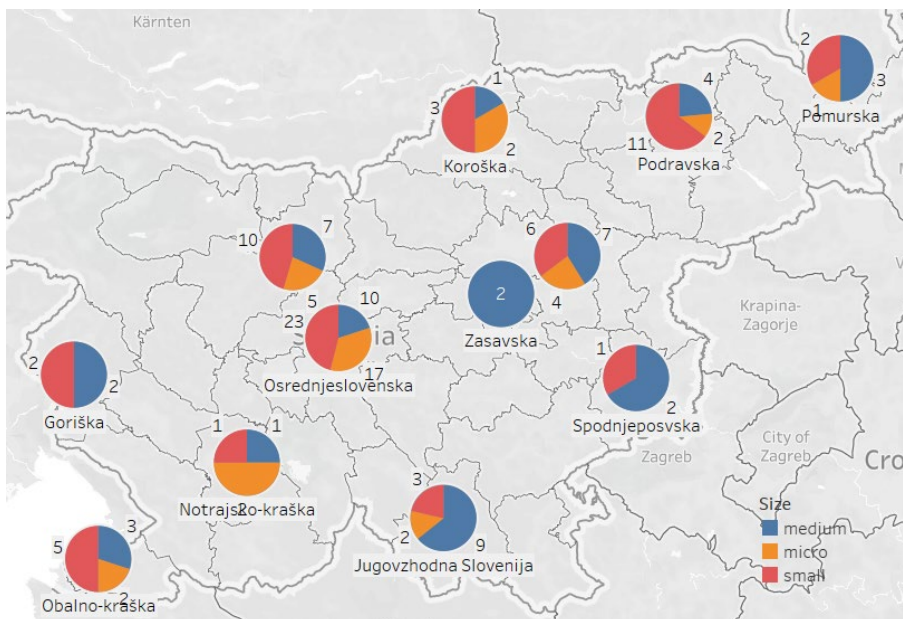


Figure 1: SMEs by size in different regions

#### 4 Preliminary results

Results have shown, that SMEs use different digital technologies, from basic to more complex. For example, enterprise resource planning (ERP) systems which, enable support of various business processes and areas and central data integration is used by medium and small sized enterprise in larger extent than in micro enterprises, which need simple solutions to support their business operations. Next level solutions as for example customer relationship management (CRM) systems are in general implemented in fewer enterprises. However, it is still evident that these kinds of solutions are implemented in more medium and small sized enterprises than in micro enterprises. The results are similar for business intelligence (BI) solutions. In general, we may see that the smaller the SMEs the less they are less willing to use complex digital technologies. The biggest push in digital technologies adoption during COVID-19 pandemic seems to be in BI solutions adoption in medium-sized enterprises (Table 1).

**Table 1: Complex digital technology use by SMEs**

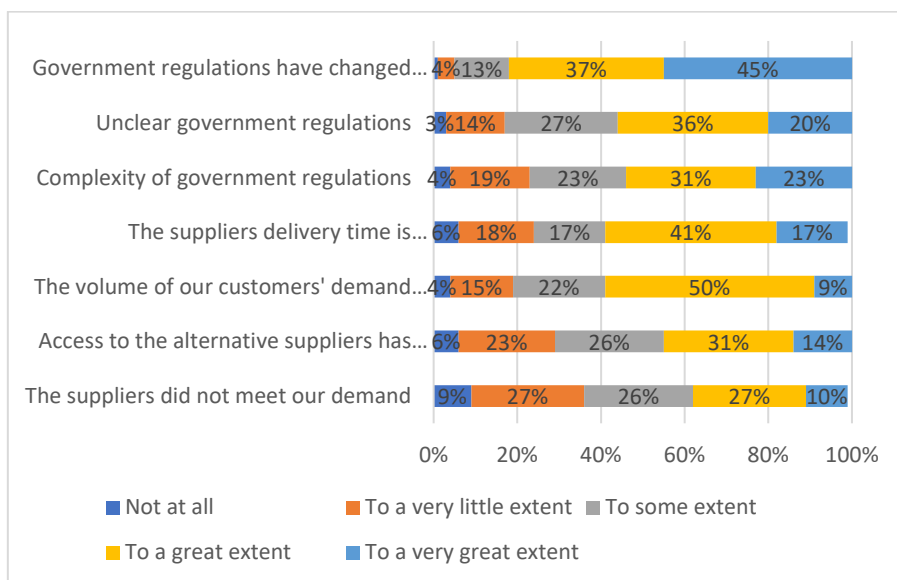
SME size	ERP		CRM		BI	
	use	adoption during Covid-19	use	adoption during Covid-19	use	adoption during Covid-19
Micro	28%	18%	18%	14%	19%	13%
Small	52%	17%	35%	21%	30%	56%
Medium	75%	13%	44%	9%	50%	20%

In contrast, SMEs use less sophisticated digital technology to a greater extent and also many SMEs have adopted this technology during Covid-19 pandemic. As can be seen from the Table 2, the majority of SMEs have adopted collaborative tools and also social media (SM) to some extent during Covid-19 pandemic. This is in line with OECD findings which imply that gap in adoption between smaller and large enterprises increases with the complexity of technologies.

**Table 2: Simple digital technology use by SMEs**

SME size	Collaborative tools		SM	
	use	adoption during Covid-19	use	adoption during Covid-19
Micro	72%	71%	46%	44%
Small	81%	91%	51%	37%
Medium	98%	69%	71%	27%

During Covid-19 pandemic, SMEs dealt with different challenges. As can be seen from the Figure 2 government regulations changes provided uncertainty and this presented the biggest challenge during COVID-19 pandemic. This challenge was followed by supply uncertainty, and customer demand uncertainty.



**Figure 2: Challenges posed by Covid-19 pandemic**

At the beginning of COVID-19, SMEs had different capabilities for implementation of new digital technologies. As can be seen from the Figure 3 more than 70% of participating SMEs had available financial resources to implement digitalisation projects and less than 60% had knowledgeable and skilled employees to carry out digitisation projects.

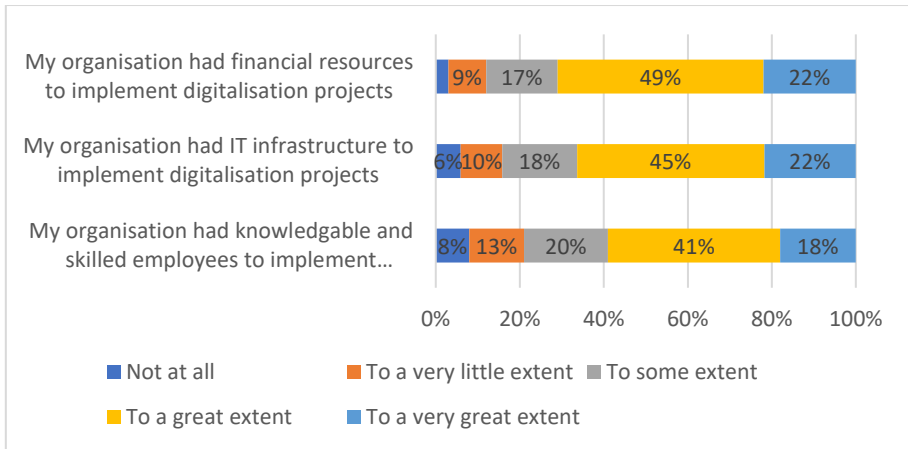


Figure 3: SMEs digitalisation readiness

SMEs have responded with digitalization to the challenges faced during COVID-19 pandemic to some extent. They have mostly intensified the use of digital channels to interact with customer and the digitalization of their internal core processes. Interestingly, the work from home was not as intensified as we expected (Figure 4).

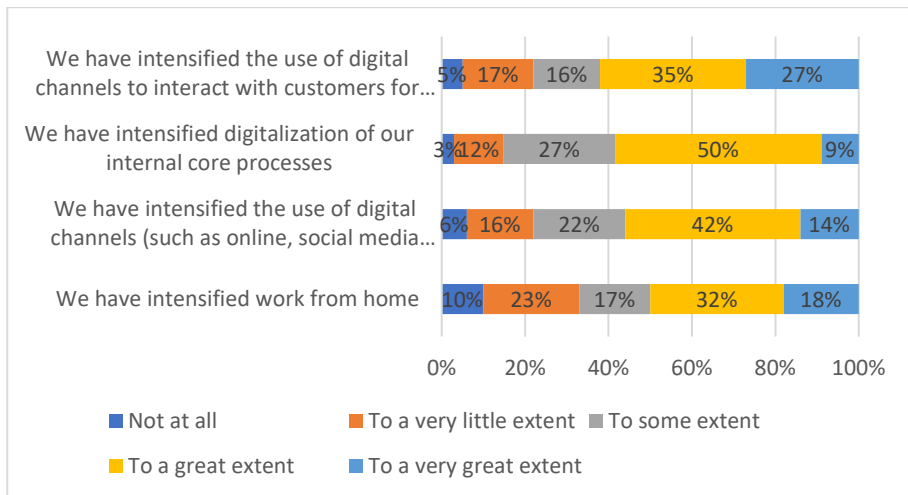


Figure 4: SMEs digitalisation response



Based on the experiences in past two years SMEs also indicated that they have become more resilient. As can be seen from the Figure 5 the majority of them are capable to scan the environment to identify crisis situation and adapt their processes and new technologies more quickly to the changes.

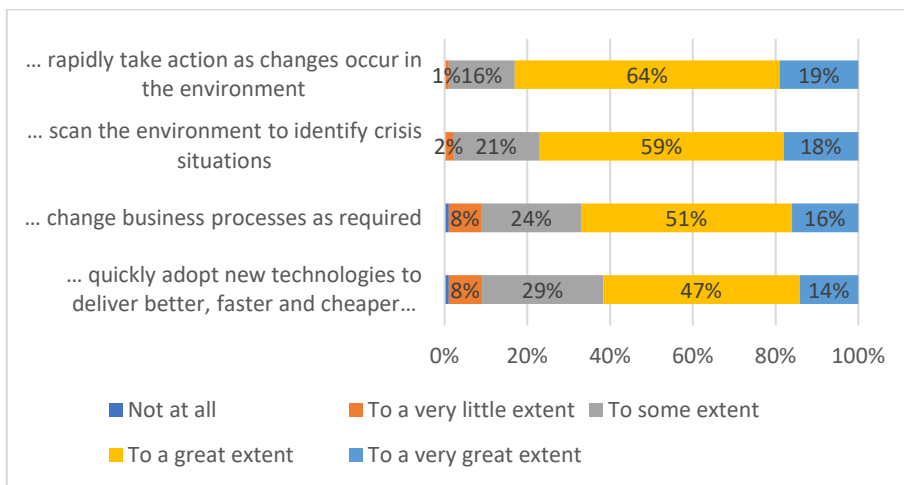


Figure 5: SMEs resilience

## 5 Discussion and conclusion

Based on the preliminary findings, we can conclude that the COVID-19 situation had an important impact on the way SMEs operate as they have been pushed to intensify the digitalization of their business operations. This means that SMEs have accelerated their digital transformation to the extent that they were able to survive and continue their daily operations. They have intensified the use of digital technologies, especially basic technologies that support collaboration between employees, their partners and customers. They also indicated the improvement of their resilience, as they are able to better respond to the changes in the environment, also with the adoption of new technologies.

In the future, SMEs tend to invest in digital transformation according to the needs caused by changes in the environment. This indicates that SMEs are still not thinking strategically about digital transformation, which requires a holistic approach that incorporates people, processes and technology. At its core, it is about having people

who are sufficiently skilled in the use of digital technology, which seems to be a major barrier for SMEs, as they lack of skilled employees to implement digital projects. As SMEs are important contributors to global economy and society, the accelerate adoption of digital skills should be facilitated by (1) ecosystem strengthening, (2) strategic outlook development, (3) structural skills development and (4) training tailored to SMEs needs (European Digital SMEs Alliance, 2021). As SMEs usually lack of necessary resources to foster digital skills of their employees, free accessible training for SMEs could be developed. In addition, the funding should be provided for the development of digital skills.

The presented findings provide only a preliminary insight of the current situation. In the future, we will conduct more detailed analysis and assess data together for both countries. This will result in more generalised theoretical insights and practical recommendations for SMEs to progress their digital transformation journey.

### Acknowledgement

This research was co-funded by the Slovenian Research Agency within the framework of bilateral cooperation (BI-HU/21-22-009).

### References

- AJPES. (2022). Letna in druga poročila. Pridobljeno 25. januar 2022., od [https://www.ajpes.si/Letna\\_porocila/Predlozitev](https://www.ajpes.si/Letna_porocila/Predlozitev)
- European Commission. (2021). Annual report on European SMEs 2020/21. Pridobljeno od file:///C:/Users/marjeta.marolt/Downloads/SME Annual Report - 2021.pdf
- European Digital SMEs Alliance. (2021). Digital Skills for SMEs: Challenges and Opportunities. Pridobljeno 25. januar 2023, od <https://www.digitalsme.eu/digital-skills-for-smes-challenges-and-opportunities/>
- Fernandes, N. (2020). Economic Effects of Coronavirus Outbreak (COVID-19) on the World Economy. SSRN Electronic Journal. <https://doi.org/10.2139/SSRN.3557504>
- FSB. (2020). One in three closed small firms fear they'll never reopen amid widespread redundancy plans . Pridobljeno 11. januar 2022., od <https://www.fsb.org.uk/resources-page/one-in-three-closed-small-firms-fear-they-ll-never-reopen-amid-widespread-redundancy-plans.html>
- Gössling, S., Scott, D., & Hall, C. M. (2020). Pandemics, tourism and global change: a rapid assessment of COVID-19. <https://doi.org/10.1080/09669582.2020.1758708>, 1–20.
- Hamburg, I. (2021). Impact of COVID-19 on SMEs and the Role of Digitalization. *Advances in Research*, 22(3), 10–17. <https://doi.org/10.9734/AIR/2021/V22I330300>
- Jeansson, J., & Bredmar, K. (2019). Digital Transformation of SMEs: Capturing Complexity. V A. Pucihar, M. Kljajić Borštnar, R. Bons, J. Seitz, H. Cripps, & D. Vidmar (Ur.), 32nd Bled eConference. Humanizing technology for a sustainable society (str. 523–541). University of Maribor Press.

- Juergensen, J., Guimón, J., & Narula, R. (2020). European SMEs amidst the COVID-19 crisis: assessing impact and policy responses. *Journal of Industrial and Business Economics*, 47(3), 499–510. <https://doi.org/10.1007/S40812-020-00169-4/TABLES/2>
- Martin, D., Romero, I., & Wegner, D. (2019). Individual, Organizational, and Institutional Determinants of Formal and Informal Inter-Firm Cooperation in SMEs. *Journal of Small Business Management*, 57(4), 1698–1711. <https://doi.org/10.1111/JSBM.12445>
- OECD. (2009). The Impact of the Global Crisis on SME and Entrepreneurship Financing and Policy Responses Centre for Entrepreneurship, SMEs and Local Development Contribution to the OECD Strategic Response to the Financial and Economic Crisis. Pridobljeno od <https://www.oecd.org/industry/smes/43183090.pdf>
- OECD. (2020). Coronavirus (COVID-19): SME policy responses. Pridobljeno od <https://www.oecd.org/coronavirus/policy-responses/coronavirus-covid-19-sme-policy-responses-04440101/>
- OECD. (2021). The Digital Transformation of SMEs. <https://doi.org/https://doi.org/10.1787/bdb9256a-en>
- Priyono, A., Moin, A., & Putri, V. N. A. O. (2020). Identifying Digital Transformation Paths in the Business Model of SMEs during the COVID-19 Pandemic. *Journal of Open Innovation: Technology, Market, and Complexity* 2020, Vol. 6, Page 104, 6(4), 104. <https://doi.org/10.3390/JOITMC6040104>
- Računalniške novice. (2020). Koronavirus že vpliva na trg prenosnih računalnikov . Pridobljeno 25. januar 2022., od <https://racunalniske-novice.com/koronavirus-ze-vpliva-na-trg-prenosnih-racunalnikov/>
- SURS. (2021). Februarja 2021 delalo od doma manj zaposlenih kot decembra 2020. Pridobljeno 25. januar 2022., od <https://www.stat.si/StatWeb/News/Index/9498>
- Ting, D. S. W., Carin, L., Dzau, V., & Wong, T. Y. (2020). Digital technology and COVID-19. *Nature Medicine* 2020 26:4, 26(4), 459–461. <https://doi.org/10.1038/s41591-020-0824-5>
- Vaccaro, A. R., Getz, C. L., Cohen, B. E., Cole, B. J., & Donnally, C. J. (2020). Practice Management During the COVID-19 Pandemic. *The Journal of the American Academy of Orthopaedic Surgeons*, 28(11), 464–470. <https://doi.org/10.5435/JAAOS-D-20-00379>

