

Digital Technology as a Resilience-Enhancing Tool for SMEs in Earthquake-Prone Developing Countries

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Abstract. The objective of this study is to investigate the role of digital technologies in enhancing the resilience of small- and medium-sized enterprises (SMEs), particularly in developing countries, amidst natural disasters. Frequent earthquakes in Aceh, Indonesia, not only pose a medical emergency but also disrupt businesses, demanding adaptability and resilience. SMEs, constrained by limited resources, face heightened vulnerability. Drawing from a survey of 30 SME owners in Indonesia, this research reveals the pivotal role played by digital technology in enabling SMEs to withstand disasters, strengthen their operations, and ensure their continuity. The study uses a mixed-methods approach, which combines qualitative and quantitative research methods. This approach allows for a comprehensive understanding of the research problem by gathering different types of data. The qualitative data from interviews are analyzed using thematic analysis. This involves identifying recurring themes and patterns related to digital technology adoption and SME resilience. The findings of the study address a significant gap in existing literature, shedding light on the specific challenges faced by SMEs in developing countries and their strategies for digital transformation. From this preliminary study, two practical recommendations emerge. Firstly, SMEs are encouraged to invest in the adoption and integration of digital technology across various facets of their operations. This entails leveraging digital communication channels, harnessing cloud computing and e-commerce platforms, utilizing data analytics for informed decision-making, and exploring automation where applicable. These digital tools empower SMEs to enhance operational efficiency, elevate customer engagement, and adapt to evolving market dynamics. Secondly, the responsibility lies with tech developers and policymakers to support SMEs on their digital transformation journey. Tech developers can make significant contributions by designing user-friendly and cost-effective digital solutions tailored to the unique needs of SMEs in developing countries. Policymakers can foster an enabling environment by enacting supportive policies, providing essential financial incentives, and advocating partnerships between SMEs and technology providers. These concerted efforts pave the way for SMEs to thrive amidst challenges and contribute to their sustained growth and prosperity.

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1 Introduction

Natural disasters have far-reaching consequences affecting not only public health but also disrupting economies and posing serious threats to businesses (1)(2). One such region, Aceh, Indonesia, frequently experiences earthquakes, leading to both medical and business emergencies. The situation demands exceptional adaptability and resilience from businesses to mitigate operational impacts (3). Among the affected, Small and Medium-sized Enterprises (SMEs) face heightened vulnerability due to their limited resources (4).

Despite the recognition of the significant challenges posed by natural disasters, a critical research gap persists in understanding how digital technologies can enhance SME resilience, particularly in developing countries like Aceh, Indonesia (5)(6). Existing literature has primarily focused on disaster management in broader terms or on larger corporations in developed

nations, often overlooking the unique vulnerabilities and opportunities that SMEs in disaster-prone regions face(7).

The state of the art in disaster management research reveals a growing recognition of the need to address the specific challenges faced by SMEs in disaster-prone regions (8). However, comprehensive insights into how digital technologies can play a pivotal role in enhancing the resilience of SMEs, especially in developing countries, remain limited.

To address this urgent issue and strengthen SME resilience during natural disasters, this research investigates the role of digital technologies (9), especially in developing countries like Aceh, Indonesia (10). The study aims to uncover the specific challenges faced by SMEs in the region and explore strategies for digital transformation that can enable their survival, fortify operations, and ensure continuity during crises.

This research is significant because it provides valuable insights into how digital technologies can help SMEs in developing countries become more resilient

and sustainable. SMEs are essential for economic growth in developing countries (11), so understanding how they can thrive during crises is important. The objective of this study is to investigate the role of digital technologies in enhancing the resilience of small- and medium-sized enterprises (SMEs), particularly in developing countries, amidst natural disasters.

This study is novel because it focuses on SMEs in developing countries, particularly in Aceh, Indonesia, which is vulnerable to natural disasters(12). The findings of this study can help policymakers, technology developers, and SMEs themselves develop strategies to improve resilience and sustainability.

2 Literature Review

2.1 Overview of Relevant Theoretical Frameworks and Concepts.

2.1.1 Resilience Theory

Resilience theory is a framework for understanding how organizations respond to and recover from disruptions. It emphasizes the importance of adaptability, flexibility, and resourcefulness in responding to crises. (13) define resilience in the context of businesses as the ability to bounce back, adapt, and thrive after facing challenges. In the context of SMEs, resilience theory helps to understand how these enterprises can withstand the impact of disasters and pandemics, making informed decisions to continue their operations amidst adversity. Organizational resilience Theory is a multidisciplinary concept that examines an organization's ability to adapt, survive, and prosper in the face of unexpected challenges, disruptions, or crises. It is also commonly referred to as organizational resilience or business resilience. The theory draws insights from various fields, including organizational studies, management, sociology, and psychology, to understand how organizations can effectively respond to and recover from adverse events (14).

While (5) provide a general definition of resilience, several studies have explored the application of resilience theory to SMEs in developing countries, such as those in Indonesia. For example, a study by (15) conducted in South East Asia examined how SMEs in a developing country context demonstrated resilience by implementing adaptive strategies during and after natural disasters. This study highlighted the relevance of resilience theory in understanding the specific challenges and responses of SMEs in similar settings.

2.1.2 Technology-Organization-Environment (TOE) Framework

The TOE framework, proposed by (16), is a model that explains how organizations adopt new technologies. It looks at three factors: the characteristics of the technology, the organization's readiness for change, and the external environment. In the context of SME resilience and digital technology adoption, the TOE framework can help understand how the characteristics of digital technologies, the organization's readiness for technology integration, and the external environment's

factors influence SMEs' decision-making processes in adopting digital solutions during crises.

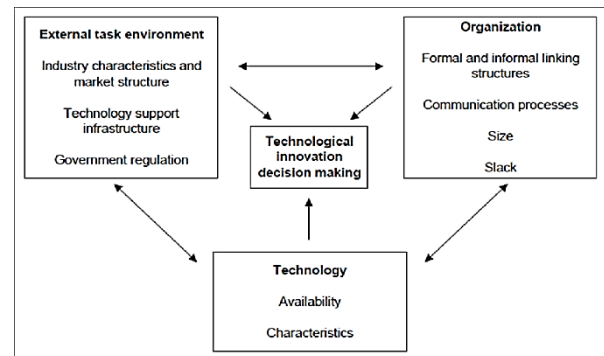


Fig. 1. The TOE framework, proposed by Tornatzky and Fleischer (1990)

Several studies have applied the TOE framework to understand the factors influencing technology adoption by SMEs in developing countries. For instance, (17) conducted a study in Indonesia that employed the TOE framework to investigate the factors affecting the adoption of digital technologies among SMEs in a developing country context. This research identified specific barriers and enablers that influence SMEs' decisions to adopt digital solutions during crises, aligning with the objectives of this study.

2.1.3 Resilience in Business Operations during Crises

Previous studies have shown that resilience is important for businesses to survive crises (18) and found that resilient organizations demonstrated agility, quick decision-making, and effective communication to cope with the challenges of the disaster. This study provides valuable insights into the strategies that larger corporations employ to navigate through the uncertainties including because of the disasters. While resilience theory provides a broad perspective on organizational resilience, studies have explored how resilience translates into practical strategies for businesses during crises. For instance, (17)(15) conducted research on the strategies employed by businesses, including SMEs, to enhance resilience during disasters in Indonesia. This study found that resilient organizations demonstrated agility, quick decision-making, and effective communication to cope with disaster-related challenges, providing insights relevant to SMEs in disaster-prone regions.

2.1.4 SMEs' Challenges in Developing Countries During Crises

SMEs in developing countries face unique challenges during crises. (8) identified some of these challenges, including financial constraints, supply chain disruptions, limited access to information, and reduced customer demand. This study underscores the vulnerability of SMEs in developing countries during crises, highlighting the need for tailored solutions to support their resilience.

2.1.5 Digital Technology Adoption in Crisis Situations

Digital technologies can play a role in supporting SME resilience during crises. For instance, (19) found that cloud computing enabled remote work, data accessibility, and cost efficiency during the crisis. This research highlights the potential of digital technologies to facilitate operational continuity during disruptions.

2.2 Identification of Gaps in the Literature that the Study Aims to Address

Despite the existing literature acknowledging the importance of resilience and digital technology adoption during crises, a significant gap persists in empirical research that specifically focuses on SMEs in developing countries vulnerable to natural disasters. Most studies predominantly concentrate on larger corporations, often based in developed countries, which may not fully represent the challenges and opportunities faced by SMEs in disaster-prone regions like Aceh, Indonesia. This research aims to address this gap by providing empirical evidence on the impact of digital technologies on SME resilience in developing countries, particularly during disasters. The findings are expected to offer practical recommendations to guide SME owners, policymakers, and technology developers in navigating the complexities of disasters and crises effectively.

3 Methodology

3.1 Research Design

The study uses a mixed-methods approach, which combines qualitative and quantitative research methods. This approach allows for a comprehensive understanding of the research problem by gathering different types of data (20). Qualitative data is gathered through semi-structured interviews with SME owners, while quantitative data is collected through a survey. The combination of qualitative and quantitative methods helps to ensure the validity and reliability of the study (21)

3.2 Data Collection

The primary data collection methods are semi-structured interviews and surveys. The interviews are conducted with a purposive sampling of SME owners in Aceh, Indonesia, who have experienced the impact of the earthquake and pandemic. The semi-structured nature of the interviews allows for open-ended discussions, enabling participants to share their perspectives and experiences freely (22). The survey is designed to assess the digital technology adoption among SMEs in the region and understand its impact on their resilience during the disaster.

The survey questionnaire is divided into two sections, each comprising five questions. The initial

section focuses on the Adoption and Integration of Digital Technology in SME Operations. Questions in this part inquire about the utilization of digital communication channels to maintain customer connections during and after disasters. They also delve into the impact of cloud computing and e-commerce platforms on reaching a broader customer base, especially beyond the local region. The subsequent section, titled Supporting SMEs on their Digital Transformation Journey, explores participants' views on the primary challenges confronted by SMEs in their region regarding the adoption of digital technologies. Additionally, it seeks their insights on the types of support or assistance they believe tech developers can offer to help SMEs overcome these challenges.

3.3 Data Analysis

The qualitative data from interviews are analyzed using thematic analysis. This involves identifying recurring themes and patterns related to digital technology adoption and SME resilience. This analysis helps gain in-depth insights into the challenges faced by SMEs and the strategies they employ to enhance their resilience (23). The quantitative data from the survey are analyzed using statistical software to generate descriptive statistics and correlations between variables. This analysis provides an overview of the extent of digital technology adoption among SMEs in Aceh and its association with their resilience during the disaster.

3.4 Ethical Considerations

The study adheres to ethical guidelines in conducting research with human participants. Informed consent is obtained from all participants before conducting interviews and distributing surveys. The confidentiality of the participants' responses is ensured, and personal identifiers are removed during data analysis to maintain anonymity. Participants are informed about the voluntary nature of their participation, and they have the right to withdraw from the study at any time without facing any consequences (24)

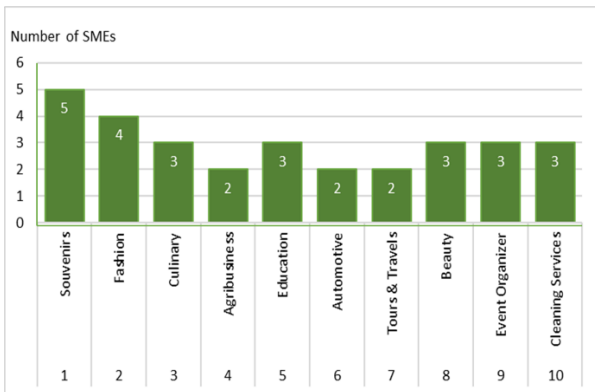
4 Findings

The survey of 30 SME owners in Aceh, Indonesia, yielded valuable insights into the pivotal role of digital technologies in bolstering SME resilience during disasters. The participating SMEs represented a diverse array of sectors, including souvenirs, fashion, culinary, agribusiness, education, automotive, tours & travels, beauty, event organization, and cleaning services.

The study surveyed the SME owners from diverse sectors such as souvenirs, fashion, culinary, agribusiness, education, automotive, tours & travels, beauty, event organizer, and cleaning services. These owners embraced technology, utilizing online marketplaces, e-commerce platforms, virtual events, and digital marketing to adapt to changing consumer demands and sustain their businesses during the crisis.

These SME owners harnessed various digital tools, such as online marketplaces, e-commerce platforms, virtual events, and digital marketing, to adapt to evolving consumer demands and sustain their businesses during crisis situations. These digital technologies facilitated broader customer outreach, virtual engagement, online consultations, and service optimization, ultimately ensuring resilience and fostering growth amidst the adversities posed by disasters.

Figure 2. The respondents: SMEs' Business



The findings are organized into two main themes that emerged from the data analysis: (1) Adoption and Integration of Digital Technology in SME Operations and (2) Supporting SMEs on their Digital Transformation Journey.

4.1 Adoption and Integration of Digital Technology in SME Operations

The survey findings indicate that SMEs in developing countries can significantly benefit from adopting and integrating digital technologies across various facets of their operations. Firstly, leveraging digital communication channels emerged as a crucial factor in staying connected with customers post-disasters. As one participant stated, "Using social media and online platforms allowed us to maintain communication with our customers, reassure them, and address their concerns promptly."

Secondly, the adoption of cloud computing and e-commerce platforms was identified as essential in expanding market reach. Several SME owners highlighted how online sales channels helped them access a broader customer base beyond their local regions. "Having an e-commerce platform enabled us to reach customers from different cities, even during lockdowns because of the crisis," noted one participant.

Moreover, harnessing data analytics emerged as a powerful tool for informed decision-making. SMEs utilize data analytics to track customer preferences, monitor market trends, and adapt their strategies accordingly. As one SME owner explained, "Data analytics allowed us to understand changing customer demands and tailor our products and services accordingly."

Finally, exploring automation to streamline processes was highlighted as a means to enhance

operational efficiency. Automation reduced dependency on manual tasks, allowing SMEs to optimize their resources and respond more effectively to market dynamics. "Automation in our production process not only saved time and costs but also improved consistency and quality," shared a survey participant.

4.2 Supporting SMEs on their Digital Transformation Journey

The survey findings also underscored the importance of support from tech developers and policymakers to facilitate SMEs' digital transformation. Tech developers can contribute by creating user-friendly and cost-effective digital solutions tailored to the needs of SMEs in developing countries. Several SME owners expressed the need for more accessible and affordable technology options. "Many digital solutions are designed for larger corporations with high costs. We need options that cater to the specific needs and budget constraints of SMEs," emphasized one participant.

Furthermore, tech developers can play a crucial role in offering training and technical assistance to SMEs during their digital transformation journey. Providing adequate support and guidance can enable SMEs to overcome potential challenges in adopting new technologies and effectively integrate them into their operations.

On the other hand, policymakers can foster an enabling environment for SMEs' digital transformation by enacting supportive policies. Financial incentives, such as grants and subsidies for technology adoption, were highlighted as critical incentives to encourage SMEs to invest in digital technologies. "Financial support from the government would make it easier for us to invest in digital solutions, especially during times of financial uncertainty," commented one SME owner.

Additionally, promoting partnerships between SMEs and technology providers was emphasized as a means to facilitate access to relevant and localized digital solutions. Such collaborations can bridge the gap between SMEs' specific needs and available technology options, creating a mutually beneficial ecosystem.

5 Discussion

The interpretation of the findings in light of the research questions and relevant theoretical frameworks reveals significant insights into the role of digital technologies in empowering SME resilience in developing countries during natural disasters as well as pandemics. The findings align closely with the research questions, addressing the specific challenges faced by SMEs in Aceh, Indonesia, and highlighting the strategies for digital transformation that enhance their resilience. Moreover, the results are consistent with relevant theoretical frameworks, such as the processes of technological innovation (16) and the concept of business resilience (25), which emphasize the importance of technological adoption and adaptability to navigate through crises.

The findings of this study corroborate and extend existing literature related to SME resilience, digital technology adoption, and disaster management during disasters and pandemics. While some studies have explored the importance of resilience and adaptability in business operations during crises (26) few have specifically investigated the impact of digital technologies on SMEs in developing countries. This research bridges the gap by providing empirical evidence that digital technologies significantly enhance operational efficiency, customer engagement, and market responsiveness for SMEs in Aceh, Indonesia. The comparison with existing literature strengthens the validity of the findings and contributes to building a more comprehensive understanding of SME resilience during disasters and pandemics.

The results contribute significantly to the understanding of the research problem by offering practical recommendations for SMEs, technology developers, and policymakers. The findings highlight the key areas where digital technology adoption can fortify SME operations and enable them to adapt effectively to evolving market dynamics during crises. SME owners in developing countries, particularly in disaster-prone regions like Aceh, Indonesia, can leverage these insights to make informed decisions regarding their digital transformation journey. By adopting digital communication channels, cloud computing, e-commerce platforms, data analytics, and automation, SMEs can enhance their resilience and ensure their survival even in the face of natural disasters and pandemics.

Additionally, the study sheds light on the crucial role of tech developers and policymakers in supporting SMEs' digital transformation. By creating user-friendly and cost-effective digital solutions tailored to SMEs' needs, tech developers can bridge the accessibility gap and facilitate technology adoption. Policymakers can also play a pivotal role by enacting supportive policies and fostering partnerships between SMEs and technology providers. These findings offer a roadmap for creating an enabling environment that empowers SMEs to thrive amidst challenges and contributes to their sustained growth and prosperity.

5.1 Limitations of the studies.

It is essential to acknowledge certain limitations and potential biases that may have influenced the research. Firstly, the study's generalizability may be limited due to its focus on Aceh, Indonesia, and SMEs in developing countries. While the findings provide valuable insights for similar contexts, caution should be exercised when applying them to other regions with different socio-economic and cultural factors.

Secondly, the data collection process may have been subject to participant bias. SME owners who participated in the survey may represent a subset of SMEs more inclined towards digital technology adoption or those who managed to survive the disasters and pandemic better than others. Additionally, the reliance on self-reported data may introduce response bias, as participants may provide socially desirable answers.

Lastly, as with any qualitative study, there may be a potential for researcher bias in data interpretation (23). To mitigate this, the research employed multiple data analysis techniques and involved multiple researchers in the analysis process to ensure objectivity and reliability.

This study explored the role of digital technologies in empowering SME resilience in developing countries during natural disasters and pandemics, with a specific focus on Aceh, Indonesia. The findings revealed that digital technologies, such as communication channels, cloud computing, e-commerce platforms, data analytics, and automation, significantly enhance operational efficiency, customer engagement, and market responsiveness for SMEs. Embracing these digital tools and practices empowers SMEs to adapt effectively to evolving market dynamics and strengthen their capacity to withstand adversities.

The implications of these findings are profound for SME owners, technology developers, policymakers, and researchers. SMEs in developing countries, particularly in disaster-prone regions, can utilize the actionable insights to adopt digital technologies strategically. By leveraging digital communication channels to stay connected with customers, utilizing cloud computing and e-commerce platforms to expand their market reach, harnessing data analytics for informed decision-making, and exploring automation to streamline processes, SMEs can enhance their resilience and ensure their survival during crises (27).

This research significantly contributes to the field in several ways. Firstly, it fills a critical gap in the existing literature by providing empirical evidence on the impact of digital technologies on SME resilience in developing countries, particularly in regions vulnerable to frequent natural disasters. The study's focus on Aceh, Indonesia, adds value by shedding light on the unique challenges faced by SMEs in disaster-prone areas.

Secondly, the research contributes to the emerging field of disaster resilience and digital technology adoption among SMEs in developing countries. By exploring how digital technologies contribute to SME resilience during disasters and pandemics, the study extends the theoretical understanding of how these technologies play a crucial role in business continuity during crises.

Lastly, the study offers practical recommendations to guide SME owners, technology developers, and policymakers in navigating through crises and fostering a more resilient and sustainable business landscape. Policymakers can create an enabling environment that fosters innovation, technology adoption, and supportive policies, while SME owners can embrace digital transformation strategically to promote business sustainability and growth.

5.2 Suggestions for Future Research

Despite its valuable insights, this study acknowledges certain limitations that open avenues for future research. Firstly, the research's generalizability is limited due to its focus on Aceh, Indonesia, and SMEs in developing countries. Future research could explore similar contexts in different regions to provide a broader perspective on SME resilience during crises.

Secondly, to address potential participant bias, future research could employ a mixed-methods approach, incorporating quantitative data to complement the qualitative findings. This approach would offer a more comprehensive understanding of the relationship between digital technology adoption and SME resilience.

Lastly, considering the dynamic nature of technological advancements and evolving business environments, future studies could adopt longitudinal designs to assess the long-term impact of digital technology adoption on SME resilience.

6 Conclusion

In conclusion, this research sheds light on the critical role of digital technologies in empowering SME resilience in developing countries during natural disasters and pandemics. The study's findings offer valuable insights for SME owners, technology developers, and policymakers to navigate through crises and foster a more resilient and sustainable business landscape.

By embracing the recommended digital tools and practices, SMEs in developing countries can enhance their capacity to withstand adversities and thrive amidst challenges. Policymakers' support and technology developers' contribution play a pivotal role in creating an enabling environment for SMEs' digital transformation journey.

This research contributes to building more resilient and sustainable economies in developing countries and supports the growth and prosperity of SMEs as crucial drivers of economic development. As SMEs continue to face unprecedented challenges, the study's findings and recommendations hold significant promise for fostering resilience and ensuring their continued contribution to economic stability and growth even during crises.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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References

1. Zhou F, Endendijk T, Wouter Botzen WJ. A review of the financial sector impacts of risks associated with climate change. *Annu Rev Resour Econ.* 2023;15.
2. Skoufias E. Economic crises and natural disasters: Coping strategies and policy

- implications. *World Dev.* 2003;31(7):1087–102.
3. Rose A, Krausmann E. An economic framework for the development of a resilience index for business recovery. *Int J Disaster Risk Reduct.* 2013;5:73–83.
4. Skouloudis A, Leal Filho W, Deligiannakis G, Vouros P, Nikolaou I, Evangelinos K. Coping with floods: impacts, preparedness and resilience capacity of Greek micro-, small-and medium-sized enterprises in flood-affected areas. *Int J Clim Chang Strateg Manag.* 2023;15(1):81–103.
5. Sulastri S, Mulyadi H, Disman D, Hendrayati H, Purnomo H. Resilience acceleration model of small and medium enterprises through digital transformation. *J East Eur Cent Asian Res.* 2023;10(4):609–19.
6. Chan S, Asni K. Revival approach to increase MSMEs resilience during COVID-19: experience from Aceh, Indonesia. *Proc AICS-Social Sci.* 2021;11:452–9.
7. Sadeghi N. Continuity of small businesses when facing increased flood risk due to global climate change impacts: A systematic literature review. *Int J Disaster Risk Reduct.* 2022;103316.
8. Eggers F. Masters of disasters? Challenges and opportunities for SMEs in times of crisis. *J Bus Res.* 2020;116:199–208.
9. Khalil A, Abdelli MEA, Mogaji E. Do digital technologies influence the relationship between the COVID-19 crisis and SMEs' resilience in developing countries? *J Open Innov Technol Mark Complex.* 2022;8(2):100.
10. Iqbal M, Yanuarni E, Mawardi MK, Astuti ES. Linking knowledge management to tourism business of SMEs in aftermath of disaster: Implications for open innovation. *J Open Innov Technol Mark Complex.* 2023;9(2):100054.
11. Chege SM, Wang D. Information technology innovation and its impact on job creation by SMEs in developing countries: an analysis of the literature review. *Technol Anal Strateg Manag.* 2020;32(3):256–71.
12. Alexander B, Chan-Halbrendt C, Salim W. Sustainable livelihood considerations for disaster risk management: implications for implementation of the Government of Indonesia tsunami recovery plan. *Disaster Prev Manag An Int J.* 2006;15(1):31–50.
13. Chen R, Xie Y, Liu Y. Defining, conceptualizing, and measuring organizational resilience: A multiple case study. *Sustainability.* 2021;13(5):2517.
14. Akpinar H, Ozer Caylan D. Modeling organizational resilience in maritime business: an ISM and MICMAC approach. *Bus Process Manag J.* 2023;29(3):597–629.
15. Sulastri S, Mulyadi H, Disman D, Hendrayati H, Purnomo H, Mavrodieva A V, et al. Governmental incentivization for SMEs' engagement in disaster resilience in Southeast Asia. *Manaj dan Bisnis.* 2023;22(1):609–19.

16. Tornatzky LG, Fleischer M, Chakrabarti AK. The processes of technological innovation. (No Title). 1990;
17. Fatimah N, Wibisono MG, Fareed A. Post global pandemic and national paradigm of resilience of Indonesian SMEs. *Manaj dan Bisnis*. 2023;22(1):35–53.
18. Salvato C, Sargiacomo M, Amore MD, Minichilli A. Natural disasters as a source of entrepreneurial opportunity: Family business resilience after an earthquake. *Strateg Entrep J*. 2020;14(4):594–615.
19. Yap S, Xu Y, Tan L. Coping with crisis: The paradox of technology and consumer vulnerability. *Int J Consum Stud*. 2021;45(6):1239–57.
20. Creswell JW, Creswell JD. *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications; 2017.
21. Tashakkori A, Teddlie C. Putting the human back in “human research methodology”: The researcher in mixed methods research. Vol. 4, *Journal of mixed methods research*. Sage Publications Sage CA: Los Angeles, CA; 2010. p. 271–7.
22. Hair JF, Black WC, Babin BJ, Anderson RE, Tatham RL. *Multivariate data analysis 6th Edition*. New Jersey: Prentice Hall; 2006.
23. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77–101.
24. Association AP. *Ethical Principles of Psychologists and Code of Conduct* <https://www.apa.org/ethics/code/ethics-code-2017.pdf>. Accessed; 2020.
25. Close K, Grebe M, Andersen P, Khurana V, Franke MR, Kalthof R. *The digital path to business resilience*. Bost Consult Gr Report Bost. 2020;
26. Putritamara JA, Hartono B, Toiba H, Utami HN, Rahman MS, Masyithoh D. Do Dynamic Capabilities and Digital Transformation Improve Business Resilience during the COVID-19 Pandemic? Insights from Beekeeping MSMEs in Indonesia. *Sustainability*. 2023;15(3):1760.
27. Torres AP, Marshall MI, Sydnor S. Does social capital pay off? The case of small business resilience after Hurricane Katrina. *J Contingencies Cris Manag*. 2019;27(2):168–81.