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The Digital Revolution: Can Yogyakarta's Micro-Enterprises Ride the Wave?

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Abstract

Research Originality: This study enhances the comprehension of micro-enterprise owners who have transitioned to entrepreneurship by investigating their enhanced skills and flexibility in using digital technology.

Research Objectives: This study examined the factors that influence technology adoption by business owners with experience in Microenterprises (MIEs). It also explored how digital technology's adoption mediates the relationship between these factors and the firm's performance.

Research Methods: This study uses quantitative Path Analysis to examine the causal links between variables that impact the performance of micro-enterprises (MIEs) in Yogyakarta, Indonesia. A random sample of 461 MIE owners was selected.

Empirical Results: The research found that micro-enterprises with organizational readiness and strategic orientation are more likely to use digital technology than those that do not adapt to or follow modern times. The cause was the high strategic orientation of Yogyakarta's MIEs.

Implications: This study's empirical implication is to assess MIE development programmes in terms of digital technology usefulness within the context of business creation and technological transfer through MIEs in Yogyakarta.

Keywords:

micro-enterprise; digital technology; business performance; digital innovation

How to Cite:

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INTRODUCTION

Microenterprises have attracted attention because they play a key role in local economic growth, particularly in Yogyakarta. According to data from Jogja *Dataku*, the number of micro companies in Yogyakarta will reach 325,006 units by 2024. This data demonstrates that the micro-enterprise sector in Yogyakarta has promising prospects and deserves further attention. Microenterprises contribute to society's economic progress and overall well-being, particularly in developing nations, such as Indonesia (Bai et al., 2021). These businesses create numerous employment opportunities, directly addressing the issue of unemployment, which, in turn, helps alleviate poverty.

By offering accessible income sources to individuals, micro-enterprises empower them to improve their living conditions and contribute to their communities (Abdurrahman et al., 2019; Feldman et al., 2014; Midgley, 2008). Furthermore, micro-enterprises promote social inclusion by allowing marginalized groups, including women, minorities, and individuals with limited formal education, to participate in the economy (Zutshi et al., 2021). However, in recent years, micro-enterprises have faced various challenges that have made it increasingly difficult to maintain their competitiveness and continue their growth trajectory. One of the challenges faced by micro-enterprises is the rapid advancement of technology. This technological revolution has brought about significant changes in various industries, requiring businesses to adapt and embrace new technologies to remain competitive (Ojo, 2006; Lofstrom et al., 2014; Teitel, 2015; Wang & Liang, 2012).

Several studies discuss digital innovation in micro-businesses, especially in specific sectors. The study conducted by (Hamid & Widyayanti, 2015) found that the empowerment of micro-businesses, especially hawker sellers in Yogyakarta City, in terms of Human Resources still needs to be improved because most micro-business actors have a relatively low level of Human Resources. This condition results in their limitations in utilizing technology and adopting technological innovations. Other findings also explain that the main obstacle for micro businesses in digital innovation is the lack of resources and organizational support. This condition makes it difficult for them to design a digital strategy (Sonar et al., 2023). The government needs to design public programs to promote inclusive digitalization by considering the types of digital technologies most accessible and beneficial to small businesses (Gaglio et al., 2022).

The performance of these micro-enterprises is influenced by various internal and external factors, necessitating a thorough investigation to identify the critical determinants of their success and competitiveness (Abusaada & Elshater, 2020; Permana, 2017; Raharja & Natari, 2021). In light of this context, micro-enterprises must explore novel approaches and adopt innovative practices to maintain relevance and competitiveness. Applying advanced technologies in the industry 4.0 revolution framework is anticipated to rejuvenate the industry. In addition, digital innovation, entrepreneurial competence, and competitive advantage can significantly improve business

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resilience (Wahdi, 2021). Digital innovation significantly impacts micro-enterprises, especially in the creative industry, to maintain competitiveness in a dynamic era. Digitalization helps them overcome market changes, global competition, and economic uncertainty (Mardikaningsih & Darmawan, 2023).

Many prior studies have focused on the benefits and problems of digitization for micro, small, and medium-sized businesses. However, studies concentrating on tiny companies are relatively uncommon, particularly in Yogyakarta. This is significant considering that the number of micro firms in Yogyakarta is vast and prospective, necessitating additional in-depth research. As a result, this research aims to determine how many micro-enterprises in Yogyakarta have adopted digital technology. This study adds to developing more targeted digital strategies and provides a better knowledge of the difficulties and opportunities confronting Yogyakarta's microenterprises. The peculiarity of this research is that it focuses on micro-enterprises, primarily informal business sectors, rather than small and medium-sized businesses. The researchers anticipate that the findings will serve as a future reference for stakeholders and policymakers in assessing the development of business creation by MIE owners using digital technology in their venture capital activities. The researchers expect the findings to affect future regulation and policy regarding knowledge and technology transfer from advanced countries to underdeveloped countries through MIEs.

METHODS

This research adopts an explanatory approach, seeking to elucidate the causal relationships among variables using quantitative Path Analysis methods. The Path Analysis method is a method that analyses the direct and indirect influence (effect) of variables that are hypothesized as a result of treatment of these variables. A random sample of 461 MIEs was generated using a random number generator or a similar randomization method. The technique is taken randomly or arbitrarily from various sectors in the Yogyakarta. The study included micro-enterprises (MIEs) that fulfilled multiple criteria. Initially, they were situated within the geographical confines of Yogyakarta, Indonesia. Furthermore, they conducted their operations inside one of the designated categories, which encompass culinary, agricultural, creative industries, fashion, processing, printing, wholesale, and retail trade firms. In addition, the chosen MIEs were mandated to already incorporate technology into their business processes. Ultimately, all chosen MIEs provided their consent to participate in the study.

Table 1. Variable Definitions

Variables		Definitions
Independent	Organizational Readiness for Digital Innovation (X1)	Organizational readiness for digital innovation in this research refers to an organization's preparedness to effectively adopt and integrate digital innovations into its operations, processes, and culture.
	Firm Characteristic (X2)	Firm characteristics in this research refer to the specific qualities and attributes of a company or organization. These characteristics can vary widely depending on the industry, size, and structure of the firm.
	Strategic orientation (X3)	Strategic orientation refers to the approach or direction that an organization takes in formulating and implementing its strategy. It encompasses the fundamental decisions and actions that guide the organization's efforts to achieve its objectives and fulfil its mission of the business.
	Persuasion of Innovation (X4)	The persuasion of innovation refers to the process of convincing stakeholders within an organization to embrace and support new ideas, technologies, or approaches aimed at driving innovation and change.
Intervening	Digital Technology for Innovation Adoption (X5)	In this study, the dummy variable representing the adoption of digital technology, denoted as DT, was used to promote and sell products. A value of 1 indicates that digital technology was implemented, while a value of 0 indicates no implementation of digital technology.
Dependent	Firm Performance (Y)	The dummy variable used in this study to assess firm performance, denoted as FP, indicates the implementation of digital technology. A value of 1 signifies the adoption of digital technology, whereas a value of 0 indicates no implementation of digital technology.

Consequently, the statistical analyses in this study rely on two fundamental statistical equations to establish and examine the relationships between the variables are:

$$Z = \alpha_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + \varepsilon_0; \quad (1)$$

$$Y = \alpha_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + Z + \varepsilon_0 \quad (2)$$

RESULT AND DISCUSSION

Table 2 shows the statistical descriptions of each variable. The researchers examined some determinant factors of digital technology adoption in an MIE business. Then, the researchers grouped the factors into organizational readiness, firm characteristics, strategic orientation, and innovation persuasion to digital technology adoption. Table 3 shows the firm performance of business owners through digital technology adoption. The statistical result from the MIEs is significantly correlated to digital technology adoption. Organizational readiness, firm characteristics, strategic orientation, and persuasion of innovation significantly influence digital technology adoption. These factors also show a significant correlation with firm performance.

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Table 2. The Descriptive Statistics

Variables	Obs	Min	Mean	Max
Organizational Readiness for Digital Innovation	461	1	4,452	5
Firm Characteristic	461	1	4,479	5
Strategic orientation	461	1	4,381	5
Persuasion of Innovation	461	1	4,498	5
Digital Technology for Innovation Adoption	461	1	4,432	5
Firm Performance	461	1	4,427	5

Source: Author's Calculation Results from SPSS 25 (2023).

Table 3 shows two structural equations are used in the Path Analysis. The first equation aims to identify how Organizational Readiness for Digital Innovation (X1), Firm Characteristics (X2), Strategic Orientation (X3), and Persuasion of Innovation (X4) affect the adoption of Digital Technology for Innovation (Z) in the context of MIEs. Meanwhile, the second equation is intended to evaluate if these variables positively impact the performance of MIEs. This analysis helps to understand the relationships between these factors and their potential influence on MIEs' performance.

In the first equation, the calculation of the total path coefficient is performed using the following formula. This comprehensive method provides a clear understanding of the relationships between variables and helps in the identification of the key factors influencing the outcome:

$$e^1 = \sqrt{1 - R^2} = \sqrt{1 - 0{,}744} = 0{,}879$$

$$Z = 0{,}328X1 + 0{,}498X2 + 0{,}412X3 + 0{,}715X4 + 0{,}879 \quad (1)$$

Table 3. First Structural Equation Path Coefficient

Independent Variables	Table 3. First Structural Equation Path Coefficient	B	T score	Probability	Conclusion
Organizational Readiness for Digital Innovation (X1)	Firm Performance (Y)	0,372	4,831	0,000	Sig.
Firm Characteristic(X2)		0,451	5,622	0,000	Sig.
Strategic orientation(X3)		0,549	4,519	0,001	Sig.
Persuasion of Innovation(X4)		0,384	3,857	0,000	Sig.
Digital Technology for Innovation Adoption (Z)		-0,367	-3,726	0,003	Sig.
N = 461					
R square = 0,683					
T table = 1,964					
Significant at P-Value<0,05					

Source: Author's Calculation Results from SPSS 25 (2023).

Following the initial hypothesis testing, a comprehensive analysis was conducted to examine both direct and indirect effects of the studied variables. The goal was to gain a deeper understanding of how factors like Organizational Readiness and Strategic Orientation drive MIEs' successful adoption of digital technologies, ultimately impacting overall performance. These insights will be valuable for both researchers seeking to expand the knowledge base on MIE innovation and practitioners developing strategies to support this sector. In the first equation (Table 3), a path coefficient formula was used to model the relationships between variables and pinpoint the most influential factors in technology adoption. This comprehensive method reveals the complex interplay between innovation readiness and the specific outcomes MIEs achieve:

$$e^1=\sqrt{(1-R^2)}=\sqrt{(1-0,683)}=0,826$$

$$Y = 0,372X1 + 0,451X2 + 0,549X3 + 0,384X4 - 0,367Z + 0,826 \quad (2)$$

This study deployed a sample size of 461 owners of micro, small, and medium-sized enterprises (MIE) in Yogyakarta. 55% of the individuals had completed Senior High School education, whereas 30% had obtained a Bachelor's Degree. The level of education corresponds to the findings of previous research conducted by Trinugroho et al. (2022) as an additional significant factor in adopting digital technologies. The advent of the digital era has significantly transformed the business environment, enabling organisations to completely rethink their offerings, services, and even their entire business frameworks (Odgers & Jensen, 2020; Susser, 2019; Jin et al., 2023; El-Chaarani, 2023; Modgil et al., 2022). The outcomes of this study further support this viewpoint by illustrating the crucial connection between an organization's preparedness for digital innovation and its capacity to embrace new technology effectively. Across many industries worldwide, it has been noted that MIEs that take a proactive approach to digitalization are more likely to produce outcomes driven by innovation (Snyder-Halpern, 2001; Walczuch et al., 2007). In addition, Mamun's (2017) study done in Malaysia supports the idea that there is a broader trend in Southeast Asia where the adoption of MIE tech is driven by organizational readiness, strategic orientation, and persuasion of innovation (Lee & Trimi, 2021; Lokuge & Dongming, 2018).

Prior research highlights that the ability of a Multinational Enterprise (MIE) to adopt innovation is influenced by factors such as pre-existing conditions, firm-specific knowledge, and risk orientation (Albooshi et al., 2021; Brooks et al., 2023). This study established a notable correlation between the attributes of a company (X2) and its performance (Y) in the specific setting of Indonesia. Nevertheless, the influence of firm characteristics on performance seems contingent on the unique setting, perhaps affected by variations in how these qualities manifest within each firm, disparities in performance assessment, and larger market dynamics (Fracasso & Jiang, 2022; Schienstock, 2011). Crucially, the results also emphasize the substantial beneficial impact of adopting digital technology on the performance of Indonesian micro, small, and medium-sized enterprises (MIEs). This highlights the necessity for further investigation to explore how particular attributes of companies interact with digitalization plans to influence the success of MIE (Leenders & Chandra, 2023).

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Although earlier literature recognizes the significance of factors that influence the adoption of innovation by MIEs, it frequently overlooks a perspective that focuses on performance. This study establishes a clear link between adopting digital technology for innovation and its significant impact on corporate performance. Indonesian micro-enterprises skilled in using digital technology to generate innovative results, present new products or services to customers, or target new markets while adjusting production methods experience a substantial performance improvement. These findings indicate that the interaction between these variables may be more intricate than previously believed. Therefore, additional study is necessary to comprehensively understand how company characteristics affect performance in various situations (Fracasso & Jiang, 2022; Lan, 2023).

The strategic direction of a business, which includes its approach to market information and the successful utilization of new opportunities, is a significant element that influences the adoption of innovation (Mamun, 2017). This research is consistent with previous studies conducted by Kumar et al. (2012) and Rizan et al. (2019), which emphasize the significance of strategic decision-making in promoting innovation in the field of MIE (Khurana et al., 2021). Failure to prioritize innovation in today's ever-changing business environment puts companies at risk of lagging behind their rivals. The influence of innovation is crucial in determining how medium-sized and large enterprises evaluate the possible advantages of implementing change. Mamun (2017) states that profitability, cost-savings, efficiency, social benefits, and adaptability to difficulties are the main factors that influence a firm's perspective. The alignment of these elements is likely to inspire MIEs to engage in experimentation and actively adopt innovative practices. The results of this study support the previous research conducted by Al-Rahmi et al. (2019) and Niloofar et al. (2021), highlighting the significant role of persuasion in influencing attitudes towards innovation in the field of MIE. One essential element is persuading innovation, which influences an MIE's perspective of the factors that drive performance. Mamun (2017) identifies several factors that drive these results, including profitability, costs, efficiency increases relative to existing deficits, additional outcomes such as social benefits, adherence to norms and values, and the ability to manage complexities. When these drivers are correctly aligned, there is a higher probability that individuals will experiment and thoroughly evaluate the results of adopting innovative practices. This conclusion is corroborated by prior studies identifying comparable factors that drive innovation adoption, such as profitability, costs, and efficiencies. The references cited are Al-Rahmi et al. (2019), Niloofar et al. (2021), and Henfridsson et al. (2014). Thorough research emphasizes the significance of comprehending the primary elements that influence the adoption of innovation among micro and small companies (MSEs), as these aspects directly affect the advantages they gain. This study, which examines explicitly MIEs in Yogyakarta, Indonesia, provides evidence that the adoption of digital technology has a notable and beneficial effect on the overall performance of these firms. Therefore, MIEs that efficiently utilize digital tools to expand their market, innovate their products, or improve their processes will

likely achieve better results. The findings of this study are consistent with previous worldwide research that emphasizes the significant impact of technology on smaller enterprises (Fagerberg et al., 2004; Damanpour & Aravind, 2011; Gunday et al., 2011; Price et al., 2013; Azar & Drogendijk, 2014).

The study proposed that adopting digital technology is a mediator in the connection between organizational preparedness, strategic orientation, innovation persuasion, and firm performance. The analysis, as expected, validated the mediation effect, supporting previous studies (Azar & Drogendijk, 2014; Haffke et al., 2016). Curiously, the features of the firm did not have a substantial impact on this association. This fact implies that although criteria such as a company's size, age, or industry are commonly believed to influence MIE performance significantly, their effect may be less noticeable when digital technology adoption is effectively utilized. However, the success of an MIE in the digital era depends more on its internal preparedness, strategic integration of technology with objectives, and ability to cultivate a culture that embraces innovation.

This study shows that digital technology completely mediates the connection between the features of MIE innovation and the success of a corporation. These findings emphasize the dual function of technology as both a facilitator of innovation and a driver for transforming invention into measurable commercial results. In essence, organizations that effectively use digital tools are more likely to develop innovative ideas and optimize the advantages of those ideas by improving performance. Technologically-driven innovation plays a vital role in driving the growth and success of MIE (Song, 2014). Micro-enterprises that efficiently utilize technology are highly likely to gain a substantial boost in their likelihood of success. McKinsey & Company (2020) conducted a study that found organizations with robust digital capabilities surpass their competitors in various crucial aspects, such as revenue growth and customer satisfaction. Micro-enterprises can enhance their competitive advantage, optimize operational efficiency, and expand their reach by adopting digital tools and tactics. Technology is essential for the development of micro-enterprises in today's digital era. Due to the swift progress of digital tools and platforms, businesses of all sizes can optimize their operations and broaden their scope (Tarr, 2021).

Moreover, enhanced operational efficiency is a significant advantage technology offers micro-enterprises. According to Buttle and Maklan (2019), utilizing digital technologies such as customer relationship management (CRM) systems, inventory management software, and accounting software helps optimize business operations, minimize human labor, and enhance efficiency. Furthermore, technology empowers micro-enterprises to access a broader demographic and exploit untapped markets (Nhleko, 2017). Businesses can utilize internet platforms, social media channels, and e-commerce websites to establish connections with customers outside their immediate vicinity and extend their global reach. Hence, using digital tools and tactics might assist micro-enterprises in maintaining competitiveness in the current dynamic business landscape. By implementing cutting-edge technologies, businesses can distinguish themselves from rivals, improve their customer experience, and stimulate expansion.

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Notably, adopting digital technology is an enabler, equipping MIEs with the tools, infrastructure, and assistance to implement creative solutions effectively. This emphasizes the significance of guaranteeing that MIEs have both the availability of the technology itself and the necessary resources to exploit its promise correctly. In conclusion, this study's mediation model highlights the significant impact of digital technology on MIEs. By deliberately adopting and utilizing these technologies, MIEs may effectively connect innovation with tangible commercial results. This study builds upon previous research (Benner & Tushman, 2003; Mamun, 2017; Malik et al., 2020) by explicitly identifying digital adoption as the crucial process via which characteristics such as organizational readiness and strategy alignment lead to improved business performance.

CONCLUSION

This study clarifies the significance of different factors, including organizational preparedness, company attributes, strategic approach, and the influence of innovation, in promoting the acceptance of digital innovation among Micro Enterprises (MIEs). The findings highlight the significant importance of adopting digital technology for innovation as a mediator between the qualities of innovation and the performance of MIEs firms. Digital technology serves as a twin catalyst, motivating MIEs to become more innovative and competitive while equipping them with the necessary tools, resources, and infrastructure to overcome barriers to adopting innovation. The findings of this study suggest that policymakers in Indonesia should prioritize initiatives that promote adopting digital technology for innovation among MIEs. This is because digital technology is essential for fostering the expansion and achievement of MIEs in the present digital age. Nevertheless, despite the myriad advantages of technology, numerous micro-enterprises continue to encounter difficulties in embracing and executing digital solutions. Businesses often face obstacles such as limited resources, insufficient technical knowledge, and data security concerns. In order to overcome these difficulties, micro-enterprises require assistance and direction to utilize technology efficiently. This encompasses opportunities to participate in training programs, receive financial aid for technology investments, and establish collaborations with technology companies. To enhance the performance and competitiveness of micro-enterprises, governments should emphasize initiatives that encourage the adoption of digital technologies. This may involve providing financial aid, implementing training programs, and improving access to necessary resources and infrastructure.

This research has important ramifications considering the Indonesian government's initiatives to facilitate the digital transformation of micro, small, and medium enterprises (MSMEs). The Go Digital Vision (2020) aims to enable 30 million MSMEs to participate in the digital market by 2024. The E-commerce Roadmap (2019) enhances the e-commerce ecosystem, providing significant prospects for micro-enterprises. Nevertheless, it is imperative to acknowledge that a significant proportion of micro-enterprises function within the informal sector. Consequently, their readiness to embrace digital technology and

formulate a digital plan is much more crucial for success. This study recognizes various constraints. Firstly, the emphasis on a particular geographic area and a small sample size limits the capacity to apply the findings to a broader population. The utilization of a cross-sectional design in this research impedes the capacity to demonstrate causal links between variables. Furthermore, the study did not encompass all pertinent firm attributes that could potentially impact the adoption of digital innovation among MIEs. Moreover, there is a possibility of bias because subjective measures are being relied upon. To overcome these constraints, future research can broaden the geographical coverage and utilize a larger sample size to improve the generalizability of the findings. Employing a longitudinal methodology would enable a more comprehensive comprehension of the cause-and-effect links between the identified parameters and the adoption of digital innovation.

Furthermore, including a broader spectrum of business characteristics could yield a more all-encompassing depiction of the aspects that exert influence. Utilizing objective metrics would enhance the validity of the findings. Ultimately, studying the influence of external factors and performing comparison research with larger corporations could provide useful insights into the distinct obstacles MIEs encountered in the digitalization era.

REFERENCES

Abdurrahman, A., Maniza, L. H., & Lestari, M. (2019). Analisis Implementasi Manajemen Pengendalian Risiko Dalam Upaya Tercapainya Tujuan Organisasi (Studi Kasus Pada Kantor Wilayah Direktorat Jenderal Perbendaharaan Provinsi Nusa Tenggara Barat). *JIAP (Jurnal Ilmu Administrasi Publik)*, *6*(1), 30. https://doi.org/10.31764/jiap.v6i1.663.

Abusaada, H., & Elshater, A. (2020). COVID-19 Challenge, Information Technologies, and Smart Cities: Considerations for Well-Being. *International Journal of Community Well-Being*, *3*(3), 417–424. https://doi.org/10.1007/s42413-020-00068-5.

Al-Rahmi, W. M., Yahaya, N., Aldraiweesh, A. A., Alamri, M. M., Aljarboa, N. A., Alturki, U., & Aljeraiwi, A. A. (2019). Integrating Technology Acceptance Model with Innovation Diffusion Theory: An Empirical Investigation on Students' Intention to Use E-learning systems. *IEEE Access, 7*, 26797-26809.

Azar, G., & Drogendijk, R. (2014). Psychic Distance, Innovation, and Firm Performance. *Management International Review, 54*, 581-613.

Bai, C., Quayson, M., & Sarkis, J. (2021). COVID-19 Pandemic Digitization Lessons for Sustainable Development of Micro-and Small- Enterprises. *Sustainable Production and Consumption*, *27*, 1989–2001. https://doi.org/10.1016/j.spc.2021.04.035.

Benner, M.J., & Tushman, M.L. (2003). Exploitation, Exploration, and Process Management: the Productivity Dilemma Revisited. *The Academy of Management Review, 28*(3), 238-256.

https://journal.uinjkt.ac.id/index.php/etikonomi
DOI: https://doi.org/10.15408/etk.v24i1.37973

Brooks, S., Sahaym, A., Datta, A., & Srivastava, S. (2023). Risky Combination: the Role of Managerial Perceptions of Social Media Use and Entrepreneurial Orientation on SME Innovation. *Management Decision, 61*(1), 33-56.

Buttle, F., & Maklan, S. (2019). *Customer Relationship Management: Concepts and Technologies*. New Jersey: Routledge.

Damanpour, F., & Aravind, D. (2011). Managerial Innovation: Conceptions, Processes, and Antecedents. *Management and Organization Review, 8*(2), 423-454.

El-Chaarani, H., Raimi, L., & El-Abiad, Z. (2023). Funding Sources for Medical Entrepreneurship in the Digital Age (Middle East Perspective). In. Raimi, L., & Oreagba, I. A. (Eds). *Medical Entrepreneurship: Trends and Prospects in the Digital Age* (pp. 101-120). Singapore: Springer Nature Singapore.

Fagerberg, J., Mowery, D.C., & Nelson, R.R. (2004). *The Oxford Handbook of Innovation*. New York: Oxford University Press..

Feldman, M. P., L, L. Á., & R, Á. O. Á. (2014). The Character of Innovative Places: Entrepreneurial Strategy, Economic Development, and Prosperity. *Small Business Economics,* 9–20. https://doi.org/10.1007/s11187-014-9574-4.

Fracasso, A., & Jiang, K. (2022). The Performance of Private Companies in China Before and During the Global Financial Crisis: Firms' Characteristics and Entrepreneurs' Attributes. *Economic Change and Restructuring, 55*(2), 803-836.

Gaglio, C., Kraemer-Mbula, E., & Lorenz, E. (2022). The Effects of Digital Transformation on Innovation and Productivity: Firm-Level Evidence of South African Manufacturing Micro and Small Enterprises. *Technological Forecasting and Social Change*, *182*, 121785. https://doi.org/10.1016/j.techfore.2022.121785.

Gunday, G., Ulusoy, G., Kilic, K. & Alpkan, L. (2011). Effects of Innovation Types on Firm Performance. *International Journal of Production Economics, 133*(2), 662-676.

Haffke, I., Kalgovas, B. J., & Benlian, A. (2016). The Role of the CIO and the CDO in an Organization's Digital Transformation. *Proceeding of the 37th International Conference on Information System.*

Hamid, M., & Widyayanti, E. R. (2015). Model Pemberdayaan Usaha Mikro Dan Pengaruhnya Terhadap Kemandirian Usaha. *Jurnal Riset Manajemen Sekolah Tinggi Ilmu Ekonomi Widya Wiwaha Program Magister Manajemen*, *2*(1), 75–93. https://doi.org/10.32477/jrm.v2i1.164.

Henfridsson, O., Mathiassen, L., & Svahn, F. (2014). Managing Technological Change in the Digital Age: The Role of Architectural Frames. *Journal of Information Technology*, *29*, 27-43. https://doi.org/10.1057/jit.2013.30.

Jin, C., Xu, A., Zhu, Y., & Li, J. (2023). Technology Growth in the Digital Age: Evidence from China. *Technological Forecasting and Social Change*, *187*, 122221. https://doi.org/10.1016/j.techfore.2022.122221.

Khurana, S., Haleem, A., Luthra, S., & Mannan, B. (2021). Evaluating Critical Factors to Implement Sustainable Oriented Innovation Practices: An Analysis of Micro,

Small, and Medium Manufacturing Enterprises. *Journal of Cleaner Production, 285*, 125377. https://doi.org/10.1016/j.jclepro.2020.125377.

Kumar, K., Boesso, G., Favotto, F., & Menini, A. (2012). Strategic Orientation, Innovation Patterns and Performances of SMEs and Large Companies. *Journal of Small Business and Enterprise Development*, *19*(1), 132-145.

Lan, T. T. N. (2023). Market Development Strategy of Renewable Energy Industry in Vietnam. *International Journal of Business and Globalisation, 10*, 1-18.

Lee, S. M., & Trimi, S. (2021). Convergence Innovation in the Digital Age and in the COVID-19 Pandemic Crisis. *Journal of Business Research, 123*, 14-22.

Leenders, M. A., & Chandra, Y. (2013). Antecedents and Consequences of Green Innovation in the Wine Industry: The Role of Channel Structure. *Technology Analysis & Strategic Management, 25*(2), 203-218.

Lokuge, S., Sedera, D., Grover, V., & Dongming, X. (2018). Organizational Readiness for Digital Innovation: Development and Empirical Calibration of a Theoretical Framework. *Proceedings of the 39th International Conference on Information Systems (ICIS 2018)*, San Francisco, CA, USA.

Malik, F., Wang, F., Naseem, M. A., Ikram, A., & Ali, S. (2020). Determinants of Corporate Social Responsibility Related to CEO Attributes: An Empirical Study. Sage Open, 10(1), 2158244019899093.

Mamun, A. A. (2018). Diffusion of Innovation Among Malaysian Manufacturing SMEs. European *Journal of Innovation Management, 21*(1), 113-141.

Mardikaningsih, R., & Darmawan, D. (2023). Strategi Inovasi Bisnis Sebagai Upaya Peningkatan Keunggulan KompetitifDan Pertumbuhan Bisnis UMKM Industri Kreatif Di Era Digital. *GLORY (Global Leadership Organizational Research in Management)*, *1*(4), 371–386.

Midgley, J. (2008). Microenterprise, Global Poverty and Social Development. *International Social Work*, *51*(4), 467–479. https://doi.org/10.1177/0020872808090240.

Modgil, S., Dwivedi, Y. K., Rana, N. P., Gupta, S., & Kamble, S. (2022). Has Covid-19 Accelerated Opportunities for Digital Entrepreneurship? An Indian Perspective. *Technological Forecasting and Social Change, 175*, 121415.

Nhleko, M. A. N. (2017). The Use of Small, Medium and Micro-Enterprises as a Strategic Tool for Women Socio-Economic Empowerment in the Northern Rural KwaZulu-Natal. (*Unpublished Dissertation*). Durban: Durban University of Technology.

Niloofar, P., Francis, D. P., Lazarova-Molnar, S., Vulpe, A., Vochin, M. C., Suciu, G., Balanescu, M., Anestis, V., & Bartzanas, T. (2021). Data-Driven Decision Support in Livestock Farming for Improved Animal Health, Welfare and Greenhouse Gas Emissions: Overview and Challenges. *Computers and Electronics in Agriculture, 190*, 106406. https://doi.org/10.1016/j.compag.2021.106406.

Odgers, C. L., & Jensen, M. R. (2020). Adolescent Mental Health in the Digital Age:

https://journal.uinjkt.ac.id/index.php/etikonomi
DOI: https://doi.org/10.15408/etk.v24i1.37973

Facts, Fears, and Future Directions. *Journal of Child Psychology and Psychiatry, 61*(3), 336-348.

Ojo, K. (2006). Transformation of Micro-Finance Schemes from Subsistence Living to Small-Scale Enterprises in Nigeria. *UNESCO Policy Paper No. 11-2.*

Permana, S. H. (2017). Strategi Peningkatan Usaha Mikro, Kecil, dan Menengah (UMKM) di Indonesia. *Aspirasi*, *8*(1), 93–94.

Raharja, S. J., & Natari, S. U. (2021). Pengembangan Usaha Umkm Di Masa Pandemi Melalui Optimalisasi Penggunaan Dan Pengelolaan Media Digital. *Kumawula: Jurnal Pengabdian Kepada Masyarakat*, *4*(1), 108-120. https://doi.org/10.24198/kumawula.v4i1.32361.

Rizan, M., Balfas, F., & Purwohedi, U. (2019). The Influence of Strategic Orientation, Organizational Innovation Capabilities and Strategic Planning on the Performance of Technology-Based Firms. *Academy of Strategic Management Journal, 18*(3), 1-11.

Schienstock, G. (2011). Path Dependency and Path Creation: Continuity vs Fundamental Change in National Economies. *Journal of Futures Studies, 15*(4), 63-76.

Snyder-Halpern, R. (2001). Indicators of Organizational Readiness for Clinical Information Technology/Systems Innovation: A Delphi Study. *International Journal of Medical Informatics*, 63(3), 179-204.

Lofstrom, M., Bates, T., & Parker, S. C. (2014). Why Are Some People More Likely to Become Small-Businesses Owners than Others: Entrepreneurship Entry and Industry-Specific Barriers. *The Journal of Business Venturing,* 29(2), 232-251. https://doi.org/10.1016/j.jbusvent.2013.01.004.

Susser, D., Roessler, B., & Nissenbaum, H. (2019). Online Manipulation: Hidden Influences in a Digital World. *Georgetown Law Technology Review*, *4*, 1, 1-45.

Sonar, H., Ghag, N., Kharde, Y., & Singodia, M. (2023). Digital Innovations for Micro, Small and Medium Enterprises in the Net Zero Economy: A Strategic Perspective. *Business Strategy & Development*, *6*(4).

Song, C. (2014). Factors Influencing Micro-Enterprises' Information Technology Adoption. (*Unpublished Dissertation)*. Omaha: University of Nebraska at Omaha.

Tarr, M. (2021). The Impact of Disruptive Technologies on the Growth and Development of Small Businesses in South Africa. (*Unpublished Dissertation).* Cape Town: Cape Peninsula University of Technology.

Teitel, S. (2015). Industry 4.0. Challenges and Solutions for the Digital Transformation and Use of Exponential Technologies. *Technology and Skills in Zimbabwe's Manufacturing*, 18–25. https://doi.org/10.1057/9780230514027_2.

Wahdi, H. (2021). Pengaruh Inovasi Digital dan Kompetensi Kewirausahaan Terhadap Keunggulan Bersaing dan Dampaknya ke Resiliensi Bisnis. *Jurnal Ilmiah MEA (Manajemen, Ekonomi, dan Akuntansi)*, *5*(3), 1610–1622.

Walczuch, R., Lemmink, J., & Streukens, S. (2007). The Effect of Service Employees' Technology Readiness on Technology Acceptance. *Information & Management, 44*(2), 206-215.

Wang, Y. E., & Liang, Z. (2012). The Effect of Government Policy on Tech SMEs'Growth. *Advances in Information Sciences and Service Sciences*, *4*(19), 449–455. https://doi.org/10.4156/AISS.vol4.issue19.56.

Zutshi, A., Mendy, J., Sharma, G. D., Thomas, A., & Sarker, T. (2021). From Challenges to Creativity: Enhancing SMEs' Resilience in the Context of Covid-19. *Sustainability*, *13*(12), 6542. https://doi.org/10.3390/su13126542.

https://journal.uinjkt.ac.id/index.php/etikonomi
DOI: https://doi.org/10.15408/etk.v24i1.37973