

BUKTI KORESPONDENSI
ARTIKEL JURNAL NASIONAL BEREPUTASI

Judul artikel : Digital Transformation and Business Incubation on SME
Performance in Indonesia

Jurnal : Jurnal Ilmiah Manajemen Kesatuan, 2025, volume
13(4), 2184 – 2193

Penulis : Alif Ringga Persada

No.	Perihal	Tanggal
1.	Bukti konfirmasi submit artikel dan artikel yang disubmit	11 Januari 2025
2.	Bukti konfirmasi dan keputusan editor	20 Februari 2025
3.	Bukti konfirmasi revisi manuscript dari editor	21 Maret 2025
4.	Bukti konfirmasi review dan hasil review pertama	26 Maret 2025
5.	Bukti konfirmasi review dan hasil review kedua	11 Mei 2025
6.	Bukti artikel revisi hasil Turnitin dan form hasil perbaikan	23 Mei 2025
7.	Bukti konfirmasi artikel accepted oleh editor jurnal	29 Juni 2025
8.	Bukti konfirmasi artikel terpublikasi online	1 Juli 2025

**1. Bukti Konfirmasi Submit
Artikel dan Artikel yang
Disubmit
(11 Januari 2025)**



Alif RinggaPersada <alifringga@upi.edu>

JIMKES – Manuscript ID - 3441

1 message

JIMKES IBIK <jimkes.ibikjurnal@gmail.com>
To: alifringga@upi.edu

Sat, Jan 11, 2025 at 11:16 AM

Dear Author,

Thank you for submitting the manuscript, "**The Impact of Digital Transformation and Business Incubation on Small and Medium Enterprises (SMEs) Business Performance**" to Jurnal Ilmiah Manajemen Kesatuan (JIMKES).

With the online journal management system that we are using, you will be able to track its progress through the editorial process by logging in to the journal web site:

Submission URL: <https://jurnal.ibik.ac.id/index.php/jimkes/authorDashboard/submission/3441>

If you have any questions, please contact me. Thank you for considering this journal as a venue for your work.

Warm regards,

Editorial Team,

Jurnal Ilmiah Manajemen Kesatuan (JIMKES)

Workflow

Publication

Submission

Review

Copyediting

Production

Submission Files

Q Search

12396	Manuscrip_JIMKE5_Alif_Ringga_Persada.pdf	Jan 11, 2025	Article Text
------------------	--	--------------	--------------

Download All Files

The Impact of Digital Transformation and Business Incubation on Small and Medium Enterprises (SMEs) Business Performance

ABSTRACT

In the digital era, digital transformation and business incubation are key factors in improving the performance of Small and Medium Enterprises (SMEs) in Indonesia. This research uses an explanatory quantitative approach to analyze the influence of these two aspects on 200 SMEs in Indonesia that have adopted digital technology and participated in incubation programs. Data were collected through questionnaires and analyzed using multiple linear regression. The results of the study show that digital transformation has a significant impact on SME business performance, through the use of e-commerce, digital management systems, and social media, increasing operational efficiency and market reach. Incubation programs also play an important role in improving performance by providing training, mentoring, and access to business networks. The synergy between digital transformation and business incubation has been shown to significantly improve performance.

Keywords: Digital transformation, Business incubation, SMEs business performance.

ABSTRAK

Di era digital saat ini, transformasi digital dan inkubasi bisnis menjadi faktor kunci dalam meningkatkan kinerja Usaha Kecil Menengah (UKM) di Indonesia. Penelitian ini menggunakan pendekatan kuantitatif eksplanatif untuk menganalisis pengaruh kedua aspek tersebut terhadap 200 UKM di Indonesia yang telah mengadopsi teknologi digital dan mengikuti program inkubasi. Data dikumpulkan melalui kuesioner dan dianalisis menggunakan regresi linier berganda. Hasil penelitian menunjukkan bahwa transformasi digital berpengaruh signifikan pada kinerja bisnis UKM, melalui penggunaan ecommerce, sistem manajemen digital, dan media sosial, meningkatkan efisiensi operasional dan jangkauan pasar. Program inkubasi juga berperan penting dalam meningkatkan kinerja dengan memberikan pelatihan, pendampingan, dan akses ke jaringan bisnis. Sinergi antara transformasi digital dan inkubasi bisnis terbukti meningkatkan kinerja secara signifikan.

Kata Kunci: Transformasi digital, Inkubasi bisnis, Kinerja bisnis UKM.

INTRODUCTION

Digital transformation has emerged as a significant global phenomenon that is fundamentally reshaping the business landscape. In an era marked by the rapid evolution of information and communication technologies, digital transformation has moved from being an optional endeavor to a critical strategic imperative for all business entities, including Small and Medium Enterprises (SMEs). Digital transformation can play a significant role in achieving the SDGs. Digital transformation is recognized for its significant role in advancing the sustainable development goals (SDGs) through the use of technologies such as artificial intelligence, cloud computing, and the Internet of Things (Plekhanov et al., 2023). In addition, digital transformation can effectively contribute to the achievement of SDGs by generating new opportunities and improving economic, environmental and social aspects (Esses et al., 2021). The Sustainable Development Goals (SDG) are a global agenda agreed upon by 193 UN member states in 2015. The SDGs consist of 17 goals and 169 targets aimed at achieving sustainable development by 2030 (Wijaya et al., 2024).

Digital transformation can help SMEs to improve their performance, which can ultimately contribute to achieving SDGs, namely SDG 1 (Eradicating Poverty) and SDG 8 (Decent Work and Economic Growth). Then, even though Industry 4.0 technology has the potential to improve business performance, several studies warn of the challenges that small and medium enterprises (SMEs) may face during the adoption of this technology (Nazaruddin et al., 2024; Soni et al., 2022). SMEs often face constraints related to resource availability, market access, and technological capabilities, adoption of digital transformation can serve as an important mechanism

for survival and achieving sustainable growth in an increasingly competitive business environment. At this time, SMEs to increase their competitiveness in today's business, SMEs must effectively utilize information technology and develop and utilize their capabilities and competencies (Nazaruddin et al., 2024; Prasanna et al., 2019; Rodrigues et al., 2021; Yusuf et al., 2022). Furthermore, it is very important to improve corporate strategy by using information technology and optimizing work processes (Mrugalska & Ahmed, 2021) which involves utilizing computer systems and improving business performance in addressing market demands (Chiu & Cho, 2019; Mrugalska & Ahmed, 2021; Surya et al., 2021). The importance of information technology in business is widely recognized (Kowrdziej et al., 2013). Digitalization is a multifaceted phenomenon that encompasses various dimensions, including digital entrepreneurship, digital strategy, digital processes, and digital education (Kraus et al., 2019).

Beyond the scope of digital transformation, business incubation contributes significantly to the growth and performance of small and medium enterprises (SMEs). Business incubation facilitates access to critical resources that these firms may not have otherwise, including financial support, managerial expertise, professional networks, and opportunities for training and development. As a result, business incubation builds a stronger foundation for SMEs to start, operate, and expand their businesses more effectively. Technology and organization positively influence e-commerce adoption and SME performance (Ausat et al., 2022). Incubated firms outperform non-incubated firms due to tailored business support services. Incubated firms benefit from more employees, not incubated from the owner's experience (Zhou & Zondo, 2023). Business incubators support the growth and development of SMEs in developing countries (Napitu et al., 2023).

The integration of digital transformation and business incubation presents significant opportunities to improve the performance of small and medium enterprises (SMEs). Digital transformation facilitates increased operational efficiency, expands market accessibility, and strengthens competitiveness through innovation in products and services (Putri & Widadi, 2024). In contrast, business incubation offers critical support that optimizes the advantages of digital transformation, enabling SMEs not only to adapt to new technologies but also to take full advantage of contemporary technological capabilities.

The benefits of digital transformation and business incubation for small and medium enterprises are clear. However, challenges remain. There is a digital divide, a lack of skilled workers, and strong resistance to change. This study seeks to understand how digital transformation and business incubation affect the performance of SMEs. The purpose of this study is to find critical factors that lead to success and offer practical strategies for SMEs to improve their performance in this new digital era.

This study seeks to understand how digital transformation and business incubation programs affect the performance of small and medium enterprises. By examining the relationship between these factors and business success, the aim is to uncover ways for SMEs to use digital advancements and incubation support to strengthen their competitiveness and ensure their survival in a changing economic landscape.

LITERATURE REVIEW

Digital Transformation

The concept of digital transformation is formed by the merger of personal and corporate IT environments and summarizes the transformational effects of new digital technologies such as social, mobile, analytical, cloud and Internet of Things (SMACIT) technologies (White, 2008). In a broader sense, digital transformation is presented as the integration of digital technologies and business processes in the digital economy (Liu et al., 2011). A comparatively unlimited view sees it as the use of innovation to improve the execution or reach of a business radially (Westerman & Bonnet, 2014). A more accurate recognition under the influence of digital transformation implies three aspects of the organization: from the outside, with the improvement of the client experience and changes in its entire life cycle; inside, the impact on business goals, basic leadership and hierarchical structures; and in general, when all parts and business opportunities are affected, it usually leads to completely new business models (Hess et al., 2016).

Digital transformation is the act of integrating digital technology into every part of a business. Digital transformation changes the way organizations work, think, and serve customers. In this change, everything changes. Old ways are replaced by new methods that are valuable and provide services (Vial & Baudoin, 2019). Digital transformation is about using new tools. E-commerce, social media, big data, and cloud computing are all part of digital transformation. All of these help businesses work better, create new ideas, and stay ahead of the competition (C. Matt et al., 2015).

According to Rogers' (2003) innovation adoption theory, SMEs' decisions to adopt digital technology are influenced by various factors, including perceived relative advantage, compatibility with existing business processes, complexity, trial, and observation of results. Digital transformation can also be understood through the Resource-Based View (RBV) perspective, where digital technology is viewed as a strategic resource that can generate competitive advantage if managed properly (Barney, 1991; Widagdo et al., 2019). Meanwhile, the current phenomenon of internet utilization for SMEs has become a basic need to improve their business. Small and medium enterprises (SMEs) that use social media marketing can reach more customers and manage their client relationships more effectively (Yan & Musika, 2018). Other researchers also explain that e-commerce facilitates the relationship between companies and their clients, allowing companies to build stronger relationships with them (Alawi et al., 2018). Furthermore, Instagram social media can help business actors to promote the products they produce so that they can quickly be known to many people (Hamdi et al., 2021).

But the road to implementing digital technology is not without obstacles. Small and medium-sized companies struggle with tight budgets, lack of digital knowledge, and reluctance to embrace change (Chibelushi & Costello, 2009). The success of digital transformation in small and medium-sized companies depends on their strength to face challenges. They must integrate digital technology into their business strategy with purpose and clarity.

Business Incubation

Business incubation is a program designed to support the growth and development of SMEs by providing various resources, such as funding, mentoring, training, and access to a broad business network. The definition of business incubation presented in the document "Definition of Business Incubation" emphasizes that business incubators not only provide structural support to SMEs but also act as catalysts in accelerating business growth through various interventions focused on the specific needs of small businesses (Stephens & Miller, 2022).

In the digital era, the function of business incubation is becoming increasingly important because digital transformation requires skills and knowledge that may not be possessed by all entrepreneurs. Business incubation can help bridge this gap by providing access to the latest technologies and assisting SMEs in the process of digitizing their businesses. Business incubators also provide the training needed to master digital tools and implement them in business operations, which can ultimately improve the efficiency and performance of SMEs as a whole (Opland et al., 2022).

Business incubation helps start-ups and small businesses in their early stages. Business incubation provides the support they need to grow and succeed over time (Hackett & Dilts, 2004). Business incubation is all about helping new ventures. Business incubation offers mentorship in management, teaches entrepreneurial skills, connects people to networks, and helps them find the funding they need (Phan et al., 2005). In the small business world, incubation serves as a lifeline. Incubation lightens the burden of scarce resources and reduces the chances of failure. With mentorship and support, incubation creates a path forward.

SME business performance

SMEs business performance covers various aspects, such as achieving financial targets, customer satisfaction, operational efficiency, and continuous innovation. This definition is presented in the document "Definition of SME Business Performance," which emphasizes that business performance is not only measured from the financial aspect but also from how SMEs are able to maintain customer satisfaction and continue to innovate to stay relevant in the market (Mulyadi, 2013).

In the digital era, SMEs business performance is increasingly determined by their ability to adopt and utilize digital technology. SMEs that successfully integrate digital technology into their operations tend to be more efficient and able to offer products or services that are more in line with market needs. In addition, continuous innovation through the use of technology is also an important factor in maintaining competitive advantage and improving business performance in the long term (Johnson et al., 2024).

SME business performance in the digital era is highly dependent on their ability to utilize digital technology as a tool to improve operational efficiency, meet customer needs, and continue to innovate. Thus, measuring SME business performance must include not only the financial aspect but also their ability to adapt to technological changes and dynamic markets.

METHODS

This research uses a quantitative approach with an explanatory design. Explanatory research aims to explain the relationship between two or more symptoms or variables and explain the causes of an event (Sari et al., 2022). This research will explain the causal relationship between the independent variables (digital transformation and business incubation) and the dependent variable (SME business performance).

The techniques used are Validity Test, Reliability Test, Normality Test, Multicollinearity Test, Heteroscedasticity Test, Multiple Linear Regression Analysis, F Test and t Test. The description is as follows:

- ✓ Validity test is used to measure the validity of a questionnaire. Validity test is done by correlating each statement with the total score for each variable. SPSS software is also used in this test.
- ✓ Reliability test, reliability is a measurement that shows the extent to which the measurement is without bias and therefore guarantees measurement consistency over time and at various points on the instrument (Sekaran, 2016).
- ✓ The normality test aims to test whether in a regression model the dependent variable, independent variable or both have a normal distribution or not. A good regression model has a normal or near-normal data distribution. There are 2 ways to detect whether the residual is normally distributed or not, namely by graphical analysis and statistical tests (Ghozali, 2017).
- ✓ The multicollinearity test aims to test whether the regression model finds a correlation between one or all independent variables. The guideline for a regression model that is free from multicollinearity is to have a tolerance value of more than 0.1. The VIF limit is 10, if the VIF value is below 10, then there is no multicollinearity (Ghozali, 2017).
- ✓ This heteroscedasticity test is carried out to determine whether in the regression model there is inequality of variance from the residuals of one observation to another (Ghozali, 2017).
- ✓ Multiple linear regression analysis is a regression that has one dependent variable and two or more independent variables (Sugiyono, 2018).

The regression model used is as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \epsilon$$

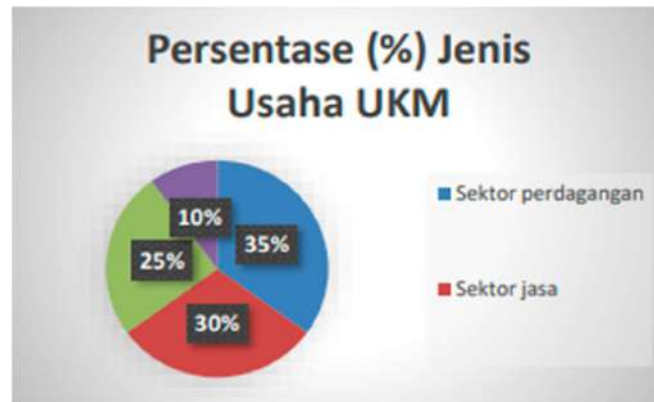
Description:

- Y is the dependent variable (SME business performance),
 - α is a constant,
 - β_1 and β_2 are the regression coefficients for each independent variable,
 - X_1 is the digital transformation variable,
 - X_2 is the business incubation variable,
 - ϵ is the error term.
- ✓ Hypothesis testing is done using the F test to see the significance of the overall regression model and the t test to see the significance of the influence of each independent variable on the dependent variable. The null hypothesis (H_0) is rejected if the p-value

RESULTS

1. Statistical Description of Respondents

This study involved 200 SMEs that met the inclusion criteria, namely SMEs that have implemented digital technology for at least two years and have participated in a business incubation program for at least one year. Of the 200 questionnaires distributed, all were returned and filled out, so the response rate was 100%. Below is a description of SMEs from the research sample.



Picture 1. Percentage of Types of SMEs Businesses Sampled
Source: (Data Analysis, 2024)

Based on the diagram, the trade sector is the most SME business activity in Indonesia, which is 35% of other types of SME businesses. While the lowest type of business is the agricultural and creative sectors, which is 10% of other types of businesses. Then if measured by the number of employees is as follows: Most SMEs are small businesses with between 10 and 50 employees (70%). The rest are micro businesses with less than 10 employees (20%) and medium businesses with more than 50 employees (10%).

The SMEs used as samples are spread across various provinces in Indonesia, with the highest concentration in West Java (25%), DKI Jakarta (20%), East Java (15%), and other provinces (40%).

2. Validity and Reliability Test

Before further analysis was carried out, validity and reliability tests were carried out on the research instruments.

- ✓ Validity Test: The results of the validity test show that all questionnaire items have a Pearson Product Moment correlation value above 0.3, which means that all items are valid.
- ✓ Reliability Test: The results of the reliability test show a Cronbach's Alpha value of 0.89 for the digital transformation variable, 0.87 for the business incubation variable, and 0.91 for the SME business performance variable. All of these values are greater than 0.70, so the instrument is considered reliable.

3. Classical Assumption Test

- ✓ Normality Test: The results of the Kolmogorov-Smirnov test indicate that the residual data is normally distributed with a p value > 0.05.
- ✓ Multicollinearity Test: The VIF values for all independent variables are below 10 ($VIF < 2$), indicating no multicollinearity.
- ✓ Heteroscedasticity Test: The scatterplot between the residuals and predicted values shows a random pattern, indicating no heteroscedasticity problem.
- ✓ Autocorrelation Test: The Durbin-Watson value is 1.98, indicating no significant autocorrelation.

4. Multiple Linear Regression Analysis

The regression model used to test the influence of digital transformation and business incubation on SME business performance is as follows:

$$Y = 1,24 + 0,45X_1 + 0,38X_2 \quad Y = 1,24 + 0,45X_1 + 0,38X_2$$

Description:

- ✓ Y is SMEs business performance,
- ✓ X_1 is digital transformation,
- ✓ X_2 is business incubation.

5. F Test Results

The F-count value is 45.67 with a p value <0,001. This shows that the overall regression model is significant and both independent variables jointly affect the performance of SME businesses.

6. t Test Results

- ✓ Digital Transformation (X_1): Regression coefficient $\beta_1 = 0.45$ with a t-value of 5.12 and a p-value <0,001. This shows that digital transformation has a significant and positive influence on SME business performance.
- ✓ Business Incubation (X_2): Regression coefficient $\beta_2 = 0.38$ with a t-value of 4.76 and a p-value <0,001. This shows that business incubation also has a significant and positive influence on SME business performance.

DISCUSSION

Based on the results of the study, it shows that digital transformation has a positive and significant impact on SME business performance. SMEs that adopt digital technology, such as the use of e-commerce, digital-based management systems, and social media, experience significant improvements in operational efficiency, market expansion, and product innovation. This shows that SMEs that adopt digital technology can achieve better business performance compared to SMEs that have not implemented digital transformation. This finding is consistent with previous studies showing that digital transformation can increase the competitiveness of SMEs by expanding market access and increasing interaction with customers (D. T. Matt & Rauch, 2020; Vial & Baudoin, 2019). In the Indonesian context, where SMEs often face limited access to markets and resources, digital transformation offers an effective solution to overcome these challenges.

Business incubation has also been shown to have a positive and significant impact on SME business performance. Business incubation programs that include training, mentoring, and access to business networks help SMEs develop innovation capacity, marketing strategies, and financial management which in turn have a positive impact on their business performance. Participation in a business incubation program provides the necessary support for SMEs to adapt to market and technological changes, and improve their ability to face increasingly fierce competition. These results are in line with research by Bergek and Norrman (2008), which states that business incubation can reduce business failure rates by providing the right support at the early stages of business development (Bergek & Norrman, 2008). Another interesting finding from this study is the strong synergy between digital transformation and business incubation in improving SME performance. SMEs that combine digital transformation with participation in a business incubation program show better performance compared to SMEs that only focus on one aspect. This synergy can be explained by the dynamic capability theory (Teece et al., 1997) which states that companies that can integrate internal capabilities (in this case digital transformation) with external resources (business incubation) will have a stronger competitive advantage. In practice, business incubation can help SMEs optimize the use of digital technology by providing the right direction and support so that digital transformation can be carried out more effectively and efficiently.

The findings of this study have several important managerial implications:

- a) The Importance of Digital Transformation: SMEs must continue to drive digital transformation as part of their business strategy to improve efficiency, innovation, and competitiveness. The government and related institutions also need to provide support, such as training and access to technology, to encourage digital adoption among SMEs.
- b) The Important Role of Business Incubation: Business incubation programs need to be expanded and improved to provide more comprehensive support to SMEs, especially in facing the challenges of the digital era. Effective business incubation can help SMEs not only survive but also grow in a competitive market.
- c) Collaboration for Synergy: To achieve optimal results, SMEs need to combine digital transformation with active participation in business incubation programs. Collaboration between various parties, including the government, business incubation providers, and the private sector, is essential to create an ecosystem that supports the development of technology-based SMEs.

CONCLUSION

Based on the results of research that has been conducted regarding the impact of digital transformation and business incubation on SME business performance, several important points can be concluded as follows:

- ✓ There is a positive and significant influence between digital transformation on SME business performance.
- ✓ Participation in business incubation programs also shows a positive and significant influence on SME business performance.
- ✓ Another important finding is the strong synergy between digital transformation and business incubation, SMEs that combine these two factors simultaneously show superior business performance and can increase the competitiveness and sustainability of SMEs in a dynamic business environment.
- ✓ Research also shows that to maximize the positive impact of digital transformation and business incubation, ongoing support is needed from various parties, including the government, incubation providers, and the private sector. Strong collaboration between various stakeholders can create a conducive ecosystem for the development of technology-based SMEs.

REFERENCES

- [1] Alawi, M., Rashid, N., Al-Shami, S. A., & Al-Lamy, H. A. (2018). The determinants of E-commerce quality on small business performance in Iraq case study from ceramic industry. *Journal of Advanced Research in Dynamical and Control Systems*, 10(2 Special Issue), 70-74.
- [2] Ausat, A. M. A., Astuti, E. S., & Wilopo. (2022). Analysis Of Factors That Influence On E-Commerce Adoption and Their Impacts for SME Performance in Subang District. *Jurnal Teknologi Informasi Dan Ilmu Komputer (JTIIK)*, 9(2), 30-45.
- [3] Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 121-131.
- [4] Bergek, A., & Norrman, C. (2008). Incubator best practice: A framework. *Technovation*, 28(1-2).
- [5] Chibelushi, C., & Costello, P. (2009). Challenges facing W. Midlands ICT-oriented SMEs. *Journal of Small Business and Enterprise Development*, 16(2), 202-220.
- [6] Chiu, W., & Cho, H. (2019). E-commerce brand: The effect of perceived brand leadership on consumers' satisfaction and repurchase intention on e-commerce websites. *Asia Pacific Journal of Marketing and Logistics*, 33(6), 333-343.
- [7] Esses, D., Csete, M. S., & Németh, B. (2021). Sustainability and digital transformation in the visegrad group of central european countries. *Sustainability (Switzerland)*, 13(11), 151-162.
- [8] Ghazali, I. (2017). Aplikasi analisis multivariate dengan program IBM SPSS 23. [Multivariate analysis application with the IBM SPSS 23 program]. Semarang: Badan Penerbit Universitas Diponegoro (2016). [in Bahasa Indonesia]. R/PPM/2017 dated May 22nd.
- [9] Hackett, S. M., & Dilts, D. M. (2004). A Systematic Review of Business Incubation Research. *The Journal of Technology Transfer*, 29(1), 152-163.
- [10] Hamdi, K., Yadewani, D., & Wijaya, R. (2021). Media Sosial Instagram Dalam Mendukung Promosi Usaha Sebagai Sebuah Pilihan Atau Paksaan. *Jurnal Pustaka Mitra (Pusat Akses Kajian Mengabdikan Masyarakat)*, 1(2), 41-56.
- [11] Hess, T., Benlian, A., Matt, C., & Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive*, 15(2), 345-355.

- [12] Johnson, H., Roberts, O., & Wilson, G. (2024). Exploring the Economic Resilience of Small and Medium Enterprises (SMEs) During Financial Crises.
- [13] Kowordziej, R., Parka, J., Krupka, J., Olifierczuk, M., Nowinowski-Kruszelnicki, E., Jaroszewicz, L., & Chojnowska, O. (2013). Dielectric properties of highly anisotropic nematic liquid crystals for tunable microwave components. *Applied Physics Letters*, 103(17), 151-177.
- [14] Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2019). Digital entrepreneurship: A research agenda on new business models for the twenty-first century. *In International Journal of Entrepreneurial Behaviour and Research* (Vol. 25, Issue 2), 3333-3339
- [15] Liu, D. Y., Chen, S. W., & Chou, T. C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision*, 49(10), 171-181.
- [16] Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering*, 57, 339-343.
- [17] Matt, D. T., & Rauch, E. (2020). SME 4.0: The role of small-and medium-sized enterprises in the digital transformation. In *Industry 4.0 for SMEs: Challenges, Opportunities and Requirements*.
- [18] Mrugalska, B., & Ahmed, J. (2021). Organizational agility in industry 4.0: A systematic literature review. *Sustainability (Switzerland)*, 13(15), 12-25.
- [19] Mulyadi, M. (2013). PENELITIAN KUANTITATIF DAN KUALITATIF SERTA PEMIKIRAN DASAR MENGGABUNGKANNYA. *Jurnal Studi Komunikasi Dan Media*, 15(1), 334-355
- [20] Napitu, U., Corry, Sinurat, A., Harianja, T., Ease Arent, Mardiani, Nasution, A. M., & Napitu, H. (2023). Sosialisasi Peran Perguruan Tinggi Dan Akademisi Sebagai Inkubator Bisnis Dalam Penguatan Koperasi Sebagai Lembaga Ekonomi Kerakyatan Menuju Koperasi Modern Bagi Pelaku Ukm Di Sumatera Utara. *Jurnal Pengabdian Masyarakat Sapangambe Manoktok Hitei*, 2(1), 132-143.
- [21] Nazaruddin, I., Utami, E. R., & Rahmawati, E. (2024). Digitalization Challenges for SMEs: A Systematic Literature Review Perspective and Future Research. *JBTI: Jurnal Bisnis: Teori Dan Implementasi*, 15(1), 15-43.
- [22] Opland, L. E., Pappas, I. O., Engesmo, J., & Jacheri, L. (2022). Employee-driven digital innovation: A systematic review and a research agenda. *Journal of Business Research*, 143-145.
- [23] Phan, P. H., Siegel, D. S., & Wright, M. (2005). Science parks and incubators: Observations, synthesis and future research. *Journal of Business Venturing*, 20(2), 514-524.
- [24] Plekhanov, D., Franke, H., & Netland, T. H. (2023). Digital transformation: A review and research agenda. *European Management Journal*, 41(6), 414-424.
- [25] Prasanna, R. P. I. R., Jayasundara, J. M. S. B., Gamage, S. K. N., Ekanayake, E. M. S., Rajapakshe, P. S. K., & Abeyrathne, G. A. K. N. J. (2019). Sustainability of SMEs in the competition: A systemic review on technological challenges and SME performance. *In Journal of Open Innovation: Technology, Market, and Complexity* (Vol. 5, Issue 4), 514-525.
- [26] Ridhovan, A. R., & Anggarani, A. (2024). Innovative Strategies of Change Management in the Indonesian Banking Industry in an Election Year. *Jurnal Ilmiah Manajemen Kesatuan*, 12(5), 1899-1906.
- [27] Rodrigues, R. I., Lopes, P., & Varela, M. (2021). Factors affecting impulse buying behavior of consumers. *Frontiers in Psychology*, 12(4), 697080.
- [28] Sari, M., Rachman, H., Juli Astuti, N., Win Afgani, M., & Abdullah Siroj, R. (2022). Explanatory Survey dalam Metode Penelitian Deskriptif Kuantitatif. *Jurnal Pendidikan Sains Dan Komputer*, 3(01) 87-99.
- [29] Sekaran, U. (2016). Research methods for business: A skill building approach. John Wiley & Sons.
- [30] Soni, G., Kumar, S., Mahto, R. V., Mangla, S. K., Mittal, M. L., & Lim, W. M. (2022). A decision-making framework for Industry 4.0 technology implementation: The case of FinTech and sustainable supply chain finance for SMEs. *Technological Forecasting and Social Change*, 4(2), 180.
- [31] Stephens, S., & Miller, K. (2022). Business incubation as a community of practice: an emergent cultural web. *Entrepreneurship and Regional Development*, 34(9-10).
- [32] Sugiyono, P. D. (2018). Quantitative, qualitative, and combination research methods (Mixed methods). Bandung: Alfabeta CV.
- [33] Surya, B., Menne, F., Sabhan, H., Suriani, S., Abubakar, H., & Idris, M. (2021). Economic growth, increasing productivity of smes, and open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 151-165.
- [34] Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 121-134.
- [35] Vial, S., & Baudoin, P. (2019). Being and the screen: How the digital changes perception: Published in one volume with A Short Treatise on Design. In *Design thinking, design theory*.
- [36] Westerman, G., & Bonnet, D. (2014). *Turning Technology into Business*. Harvard Business Review Press, 256.
- [37] White, H. C. (2008). Identity and Control: How Social Formations Emerge. In *Practice*.
- [38] Widagdo, S., Ratnasari, E., & Mandala, S. (2019). Internal Factor Analysis In Management Control System Design with Organizational Objectives as Intervening Variables in Blood Transfusion Unitpmi Jember. *Sinergi: Jurnal Ilmiah Ilmu Manajemen*, 9(2), 189-201.
- [39] Yan, L., & Musika, C. (2018). The social media and SMEs business growth: How can SMEs incorporate social media.
- [40] Yusuf, M., 'Ardhuha, J., & Hikmawati, H. (2022). Pengembangan Perangkat Pembelajaran Model Problem Based Learning untuk Meningkatkan Pemahaman Konsep Fisika dan Kemampuan Berpikir Kritis Peserta Didik. *Jurnal Ilmiah Profesi Pendidikan*, 7(2), 177-188.

- [41] Zhou, H., & Zondo, R. W. D. (2023). The Role of Business Incubation Programmes on The Performance of Small And Medium Enterprises In South Africa. *The Seybold Report*, 18(5), 444-458.

**2. Bukti Konfirmasi dan
Keputusan Editor (20
Februari 2025)**

Notifications



[JIMKES] Editor Decision

2025-02-20 12:50 PM

Alif Ringga Persada, Hari Mulyadi, A. Jajang Warya Mahri, Chairul Furqon:

We have reached a decision regarding your submission to Jurnal Ilmiah Manajemen Kesatuan, "The Impact of Digital Transformation and Business Incubation on Small and Medium Enterprises (SMEs) Business Performance".

Our decision is: Revisions Required

[Jurnal Ilmiah Manajemen Kesatuan](#)



JURNAL ILMIAH MANAJEMEN KESATUAN

1st round review- Editorial Screening

Judul Naskah : The Impact of Digital Transformation and Business Incubation on Small and Medium Enterprises (SMEs) Business Performance

ID Naskah : 3441

No	Kategori	Ketentuan	Perbaikan oleh Penulis	Halaman
1.	Judul	Judul naskah maksimal 20 kata dan tidak boleh lebih dari dua baris.		
		Judul harus mencerminkan substansi isi artikel secara jelas dan spesifik.		
2.	Identitas Penulis	Nama penulis, afiliasi institusi, dan email korespondensi tidak boleh dicantumkan dalam naskah utama (blind). Identitas hanya dimasukkan melalui metadata submission di OJS.		
		Jika naskah masih mencantumkan identitas penulis, mohon dihapus terlebih dahulu untuk menjaga prinsip blind review.		
3.	Abstrak	Abstrak wajib disajikan dalam dua bahasa: Bahasa Indonesia dan Bahasa Inggris.		
		Abstrak dalam kedua Bahasa tersebut harus dalam 1 halaman, di halaman judul saja.		
		Panjang maksimal 200 kata disertai 4-6 keywords		
4.	Struktur Artikel	Artikel harus terdiri dari bagian: - Introduction - Literature Review and Hypothesis Development - Research Method - Results - Discussion - Conclusions and Suggestions		
		Minimalisir penggunaan subheading yang berlebihan. Pastikan bahwa setiap subheading disertai dengan pembahasan yang memadai dan proporsional.		
5.	Tabel dan Gambar	Tabel dan gambar harus diberi nomor urut (Table 1, Figure 1, etc.), serta dilengkapi judul dalam Inggris.		
		Pastikan setiap tabel dan gambar yang disertakan dalam naskah dikutip atau dirujuk secara eksplisit di dalam teks.		
		Gunakan standar internasional untuk penulisan angka (koma untuk ribuan, dan titik untuk desimal)		
6.	Gaya Kutipan	Gaya kutipan dan daftar pustaka wajib mengikuti format APA Style edisi ke-6.		
		Pastikan seluruh kutipan yang digunakan tercantum dalam daftar pustaka, dan sebaliknya.		
		Disarankan menggunakan reference manager seperti Mendeley atau Zotero untuk konsistensi kutipan.		

7.	Referensi dan Kutipan	Minimal terdapat 30 referensi ilmiah yang relevan dan berkualitas (jurnal, prosiding, buku referensi) dari sumber bereputasi internasional dan berbahasa Inggris.		
		Sebanyak 80% referensi sebaiknya berasal dari jurnal terbitan 5 tahun terakhir.		
		Penulis diwajibkan mengutip artikel-artikel yang relevan dari jurnal terbitan IBI Kesatuan (JIMKES , JIAKES dan RISET), dan menandainya di dalam naskah revisi.		
8.	Plagiarisme dan Orisinalitas	Kirimkan hasil pengecekan plagiarisme dengan skor maksimal 20% (menggunakan Turnitin atau alat sejenis).		

*Seluruh perbaikan wajib ditandai/highlight dengan **warna kuning** baik untuk perbaikan editorial atau substansi dari reviewer

**3. Bukti Revisi Artikel
Pasca Keputusan Editor
(21 Maret 2025)**

The Impact of Digital Transformation and Business Incubation on Small and Medium Enterprises (SMEs) Business Performance

ABSTRACT

In the digital era, digital transformation and business incubation are key factors in improving the performance of Small and Medium Enterprises (SMEs) in Indonesia. This research uses an explanatory quantitative approach to analyze the influence of these two aspects on 200 SMEs in Indonesia that have adopted digital technology and participated in incubation programs. Data were collected through questionnaires and analyzed using multiple linear regression. The results of the study show that digital transformation has a significant impact on SME business performance, through the use of e-commerce, digital management systems, and social media, increasing operational efficiency and market reach. Incubation programs also play an important role in improving performance by providing training, mentoring, and access to business networks. The synergy between digital transformation and business incubation has been shown to significantly improve performance.

Keywords: *Digital transformation, Business incubation, SMEs business performance*

INTRODUCTION

Digital transformation has emerged as a significant global phenomenon that is fundamentally reshaping the business landscape. In an era marked by the rapid evolution of information and communication technologies, digital transformation has moved from being an optional endeavor to a critical strategic imperative for all business entities, including Small and Medium Enterprises (SMEs). Digital transformation can play a significant role in achieving the SDGs. Digital transformation is recognized for its significant role in advancing the sustainable development goals (SDGs) through the use of technologies such as artificial intelligence, cloud computing, and the Internet of Things (Plekhanov et al., 2023). In addition, digital transformation can effectively contribute to the achievement of SDGs by generating new opportunities and improving economic, environmental and social aspects (Esses et al., 2021). The Sustainable Development Goals (SDG) are a global agenda agreed upon by 193 UN member states in 2015. The SDGs consist of 17 goals and 169 targets aimed at achieving sustainable development by 2030 (Wijaya et al., 2024).

Digital transformation can help SMEs to improve their performance, which can ultimately contribute to achieving SDGs, namely SDG 1 (Eradicating Poverty) and SDG 8 (Decent Work and Economic Growth). Then, even though Industry 4.0 technology has the potential to improve business performance, several studies warn of the challenges that small and medium enterprises (SMEs) may face during the adoption of this technology (Nazaruddin et al., 2024; Soni et al., 2022). SMEs often face constraints related to resource availability, market access, and technological capabilities, adoption of digital transformation can serve as an important mechanism for survival and achieving sustainable growth in an increasingly competitive business environment.

At this time, SMEs to increase their competitiveness in today's business, SMEs must effectively utilize information technology and develop and utilize their capabilities and competencies (Nazaruddin et al., 2024; Prasanna et al., 2019; Rodrigues et al., 2021; Yusuf et al., 2022). Furthermore, it is very important to improve corporate strategy by using information technology and optimizing work processes (Mrugalska & Ahmed, 2021) which involves utilizing computer systems and improving business performance in addressing market demands (Chiu & Cho, 2019; Mrugalska & Ahmed, 2021; Surya et al., 2021). The importance of information technology in business is widely recognized (Kowordziej et al., 2013). Digitalization is a multifaceted phenomenon that encompasses various dimensions, including digital entrepreneurship, digital strategy, digital processes, and digital education (Kraus et al., 2019).

Beyond the scope of digital transformation, business incubation contributes significantly to the growth and performance of small and medium enterprises (SMEs). Business incubation facilitates access to critical resources that these firms may not have otherwise, including financial support, managerial expertise, professional networks, and opportunities for training and development. As a result, business incubation builds a stronger foundation for SMEs to start, operate, and expand their businesses more effectively. Technology and organization positively influence e-commerce adoption and SME performance (Ausat et al., 2022). Incubated firms outperform non-incubated firms due to tailored business support services. Incubated firms benefit from more employees, not incubated from the owner's experience (Zhou & Zondo, 2023). Business incubators support the growth and development of SMEs in developing countries (Napitu et al., 2023).

The integration of digital transformation and business incubation presents significant opportunities to improve the performance of small and medium enterprises (SMEs). Digital transformation facilitates increased operational efficiency, expands market accessibility, and strengthens competitiveness through innovation in products and services (Putri & Widadi, 2024). In contrast, business incubation offers critical support that optimizes the advantages of digital transformation, enabling SMEs not only to adapt to new technologies but also to take full advantage of contemporary technological capabilities.

The benefits of digital transformation and business incubation for small and medium enterprises are clear. However, challenges remain. There is a digital divide, a lack of skilled workers, and strong resistance to change. This study seeks to understand how digital transformation and business incubation affect the performance of SMEs. The purpose of this study is to find critical factors that lead to success and offer practical strategies for SMEs to improve their performance in this new digital era.

This study seeks to understand how digital transformation and business incubation programs affect the performance of small and medium enterprises. By examining the relationship between these factors and business success, the aim is to uncover ways for SMEs to use digital advancements and incubation support to strengthen their competitiveness and ensure their survival in a changing economic landscape.

LITERATURE REVIEW

Digital transformation

The concept of digital transformation is formed by the merger of personal and corporate IT environments and summarizes the transformational effects of new digital technologies such as social, mobile, analytical, cloud and Internet of Things (SMACIT) technologies (White, 2008). In a broader sense, digital transformation is presented as the integration of digital technologies and business processes in the digital economy (Liu et al., 2011). A comparatively unlimited view sees it as the use of innovation to improve the execution or reach of a business radially (Westerman & Bonnet, 2014). A more accurate recognition under the influence of digital transformation implies three aspects of the organization: from the outside, with the improvement of the client experience and changes in its entire life cycle; inside, the impact on business goals, basic leadership and hierarchical structures; and in general, when all parts and business opportunities are affected, it usually leads to completely new business models (Hess et al., 2016).

Digital transformation is the act of integrating digital technology into every part of a business. Digital transformation changes the way organizations work, think, and serve customers. In this change, everything changes. Old ways are replaced by new methods that are valuable and provide services (Vial & Baudoin, 2019). Digital transformation is about using new tools. E-commerce, social media, big data, and cloud computing are all part of digital transformation. All of these help businesses work better, create new ideas, and stay ahead of the competition (C. Matt et al., 2015).

According to Rogers' (2003) innovation adoption theory, SMEs' decisions to adopt digital technology are influenced by various factors, including perceived relative advantage, compatibility with existing business processes, complexity, trial, and observation of results. Digital transformation can also be understood through the Resource-Based View (RBV) perspective, where digital technology is viewed as a strategic resource that can generate competitive advantage if managed properly (Barney, 1991; Widagdo et al., 2019). Meanwhile, the current phenomenon

of internet utilization for SMEs has become a basic need to improve their business. Small and medium enterprises (SMEs) that use social media marketing can reach more customers and manage their client relationships more effectively (Yan & Musika, 2018). Other researchers also explain that e-commerce facilitates the relationship between companies and their clients, allowing companies to build stronger relationships with them (Alawi et al., 2018). Furthermore, Instagram social media can help business actors to promote the products they produce so that they can quickly be known to many people (Hamdi et al., 2021).

But the road to implementing digital technology is not without obstacles. Small and medium-sized companies struggle with tight budgets, lack of digital knowledge, and reluctance to embrace change (Chibelushi & Costello, 2009). The success of digital transformation in small and medium-sized companies depends on their strength to face challenges. They must integrate digital technology into their business strategy with purpose and clarity.

Business incubation

Business incubation is a program designed to support the growth and development of SMEs by providing various resources, such as funding, mentoring, training, and access to a broad business network. The definition of business incubation presented in the document "Definition of Business Incubation" emphasizes that business incubators not only provide structural support to SMEs but also act as catalysts in accelerating business growth through various interventions focused on the specific needs of small businesses (Stephens & Miller, 2022).

In the digital era, the function of business incubation is becoming increasingly important because digital transformation requires skills and knowledge that may not be possessed by all entrepreneurs. Business incubation can help bridge this gap by providing access to the latest technologies and assisting SMEs in the process of digitizing their businesses. Business incubators also provide the training needed to master digital tools and implement them in business operations, which can ultimately improve the efficiency and performance of SMEs as a whole (Opland et al., 2022).

Business incubation helps start-ups and small businesses in their early stages. Business incubation provides the support they need to grow and succeed over time (Hackett & Dilts, 2004). Business incubation is all about helping new ventures. Business incubation offers mentorship in management, teaches entrepreneurial skills, connects people to networks, and helps them find the funding they need (Phan et al., 2005). In the small business world, incubation serves as a lifeline. Incubation lightens the burden of scarce resources and reduces the chances of failure. With mentorship and support, incubation creates a path forward.

SME business performance

SMEs business performance covers various aspects, such as achieving financial targets, customer satisfaction, operational efficiency, and continuous innovation. This definition is presented in the document "Definition of SME Business Performance," which emphasizes that business performance is not only measured from the financial aspect but also from how SMEs are able to maintain customer satisfaction and continue to innovate to stay relevant in the market (Mulyadi, 2013).

In the digital era, SMEs business performance is increasingly determined by their ability to adopt and utilize digital technology. SMEs that successfully integrate digital technology into their operations tend to be more efficient and able to offer products or services that are more in line with market needs. In addition, continuous innovation through the use of technology is also an important factor in maintaining competitive advantage and improving business performance in the long term (Johnson et al., 2024).

SME business performance in the digital era is highly dependent on their ability to utilize digital technology as a tool to improve operational efficiency, meet customer needs, and continue to innovate. Thus, measuring SME business performance must include not only the financial aspect but also their ability to adapt to technological changes and dynamic markets.

METHODS

This research uses a quantitative approach with an explanatory design. Explanatory research aims to explain the relationship between two or more symptoms or variables and explain the causes of an event (Sari et al., 2022). This research will explain the causal relationship between the independent variables (digital transformation and business incubation) and the dependent variable (SME business performance).

The population in this study were all SMEs in Indonesia that have implemented digital technology in their operational activities and have participated in a business incubation program. The sampling technique used was purposive sampling, which is a sampling method with certain considerations (Sugiyono, 2018). The criteria used to select the sample were: SMEs that have implemented digital technology for at least two years; SMEs that have participated in a business incubation program for at least one year; and SMEs who are willing to participate in this research.

The techniques used are Validity Test, Reliability Test, Normality Test, Multicollinearity Test, Heteroscedasticity Test, Multiple Linear Regression Analysis, F Test and t Test. The description is as follows:

- ✓ Validity test is used to measure the validity of a questionnaire. Validity test is done by correlating each statement with the total score for each variable. SPSS software is also used in this test.
- ✓ Reliability test, reliability is a measurement that shows the extent to which the measurement is without bias and therefore guarantees measurement consistency over time and at various points on the instrument (Sekaran, 2016).
- ✓ The normality test aims to test whether in a regression model the dependent variable, independent variable or both have a normal distribution or not. A good regression model has a normal or near-normal data distribution. There are 2 ways to detect whether the residual is normally distributed or not, namely by graphical analysis and statistical tests (Ghozali, 2017).
- ✓ The multicollinearity test aims to test whether the regression model finds a correlation between one or all independent variables. The guideline for a regression model that is free from multicollinearity is to have a tolerance value of more than 0.1. The VIF limit is 10, if the VIF value is below 10, then there is no multicollinearity (Ghozali, 2017).
- ✓ This heteroscedasticity test is carried out to determine whether in the regression model there is inequality of variance from the residuals of one observation to another (Ghozali, 2017).
- ✓ Multiple linear regression analysis is a regression that has one dependent variable and two or more independent variables (Sugiyono, 2018).

The regression model used is as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \epsilon$$

Description:

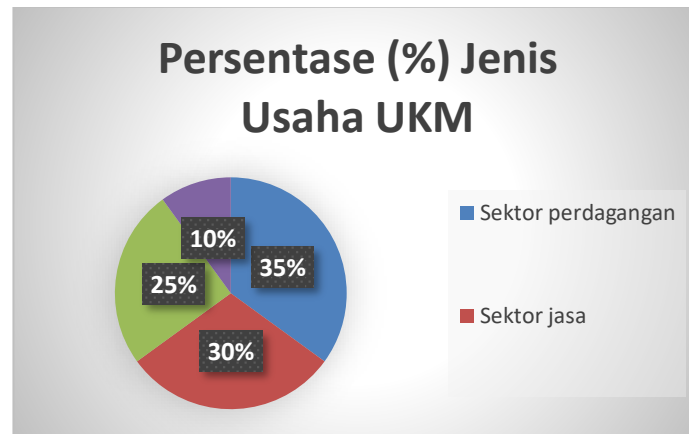
- Y is the dependent variable (SME business performance),
 - α is a constant,
 - β_1 and β_2 are the regression coefficients for each independent variable,
 - X_1 is the digital transformation variable,
 - X_2 is the business incubation variable,
 - ϵ is the error term.
- ✓ Hypothesis testing is done using the F test to see the significance of the overall regression model and the t test to see the significance of the influence of each independent variable on the dependent variable. The null hypothesis (H_0) is rejected if the p-value < 0.05 , which indicates that the independent variable has a significant influence on the dependent variable (Priyatno, 2011).

RESULTS

Statistical Description of Respondents

This study involved 200 SMEs that met the inclusion criteria, namely SMEs that have implemented digital technology for at least two years and have participated in a business incubation program for at least one year. Of the 200 questionnaires distributed, all were returned

and filled out, so the response rate was 100%. Below is a description of SMEs from the research sample.



Picture.1 Percentage of Types of SMEs Businesses Sampled
Source: (Data Analysis, 2024)

Based on the diagram, the trade sector is the most SME business activity in Indonesia, which is 35% of other types of SME businesses. While the lowest type of business is the agricultural and creative sectors, which is 10% of other types of businesses. Then if measured by the number of employees is as follows: Most SMEs are small businesses with between 10 and 50 employees (70%). The rest are micro businesses with less than 10 employees (20%) and medium businesses with more than 50 employees (10%).

The SMEs used as samples are spread across various provinces in Indonesia, with the highest concentration in West Java (25%), DKI Jakarta (20%), East Java (15%), and other provinces (40%).

2. Validity and Reliability Test

Before further analysis was carried out, validity and reliability tests were carried out on the research instruments.

- ✓ **Validity Test:** The results of the validity test show that all questionnaire items have a Pearson Product Moment correlation value above 0.3, which means that all items are valid.
- ✓ **Reliability Test:** The results of the reliability test show a Cronbach's Alpha value of 0.89 for the digital transformation variable, 0.87 for the business incubation variable, and 0.91 for the SME business performance variable. All of these values are greater than 0.70, so the instrument is considered reliable.

3. Classical Assumption Test

- ✓ **Normality Test:** The results of the Kolmogorov-Smirnov test indicate that the residual data is normally distributed with a p value > 0.05.
- ✓ **Multicollinearity Test:** The VIF values for all independent variables are below 10 ($VIF < 2$), indicating no multicollinearity.
- ✓ **Heteroscedasticity Test:** The scatterplot between the residuals and predicted values shows a random pattern, indicating no heteroscedasticity problem.
- ✓ **Autocorrelation Test:** The Durbin-Watson value is 1.98, indicating no significant autocorrelation.

4. Multiple Linear Regression Analysis

The regression model used to test the influence of digital transformation and business incubation on SME business performance is as follows:

$$Y = 1,24 + 0,45X_1 + 0,38X_2$$

Description:

- ✓ Y is SMEs business performance,
- ✓ X_1 is digital transformation,

✓ X2X_2X2 is business incubation.

5. F Test Results

The F-count value is 45.67 with a p value <0.001. This shows that the overall regression model is significant and both independent variables jointly affect the performance of SME businesses.

6. t Test Results

✓ Digital Transformation (X1X_1X1): Regression coefficient $\beta_1=0.45$ with a t-value of 5.12 and a p-value <0.001. This shows that digital transformation has a significant and positive influence on SME business performance.

Business Incubation (X2X_2X2): Regression coefficient $\beta_2=0.38$ with a t-value of 4.76 and a p-value <0.001. This shows that business incubation also has a significant and positive influence on SME business performance.

DISCUSSION

Based on the results of the study, it shows that digital transformation has a positive and significant impact on SME business performance. SMEs that adopt digital technology, such as the use of e-commerce, digital-based management systems, and social media, experience significant improvements in operational efficiency, market expansion, and product innovation. This shows that SMEs that adopt digital technology can achieve better business performance compared to SMEs that have not implemented digital transformation. This finding is consistent with previous studies showing that digital transformation can increase the competitiveness of SMEs by expanding market access and increasing interaction with customers (D. T. Matt & Rauch, 2020; Vial & Baudoin, 2019). In the Indonesian context, where SMEs often face limited access to markets and resources, digital transformation offers an effective solution to overcome these challenges.

Business incubation has also been shown to have a positive and significant impact on SME business performance. Business incubation programs that include training, mentoring, and access to business networks help SMEs develop innovation capacity, marketing strategies, and financial management which in turn have a positive impact on their business performance. Participation in a business incubation program provides the necessary support for SMEs to adapt to market and technological changes, and improve their ability to face increasingly fierce competition. These results are in line with research by Bergek and Norrman (2008), which states that business incubation can reduce business failure rates by providing the right support at the early stages of business development (Bergek & Norrman, 2008). Another interesting finding from this study is the strong synergy between digital transformation and business incubation in improving SME performance. SMEs that combine digital transformation with participation in a business incubation program show better performance compared to SMEs that only focus on one aspect. This synergy can be explained by the dynamic capability theory (Teece et al., 1997) which states that companies that can integrate internal capabilities (in this case digital transformation) with external resources (business incubation) will have a stronger competitive advantage. In practice, business incubation can help SMEs optimize the use of digital technology by providing the right direction and support so that digital transformation can be carried out more effectively and efficiently.

The findings of this study have several important managerial implications:

- a) The Importance of Digital Transformation: SMEs must continue to drive digital transformation as part of their business strategy to improve efficiency, innovation, and competitiveness. The government and related institutions also need to provide support, such as training and access to technology, to encourage digital adoption among SMEs.
- b) The Important Role of Business Incubation: Business incubation programs need to be expanded and improved to provide more comprehensive support to SMEs, especially in facing the challenges of the digital era. Effective business incubation can help SMEs not only survive but also grow in a competitive market.

- c) Collaboration for Synergy: To achieve optimal results, SMEs need to combine digital transformation with active participation in business incubation programs. Collaboration between various parties, including the government, business incubation providers, and the private sector, is essential to create an ecosystem that supports the development of technology-based SMEs.

CONCLUSION

Based on the results of research that has been conducted regarding the impact of digital transformation and business incubation on SME business performance, several important points can be concluded as follows:

- ✓ There is a positive and significant influence between digital transformation on SME business performance.
- ✓ Participation in business incubation programs also shows a positive and significant influence on SME business performance.
- ✓ Another important finding is the strong synergy between digital transformation and business incubation, SMEs that combine these two factors simultaneously show superior business performance and can increase the competitiveness and sustainability of SMEs in a dynamic business environment.
- ✓ Research also shows that to maximize the positive impact of digital transformation and business incubation, ongoing support is needed from various parties, including the government, incubation providers, and the private sector. Strong collaboration between various stakeholders can create a conducive ecosystem for the development of technology-based SMEs.

REFERENCES

- Alawi, M., Rashid, N., Al-Shami, S. A., & Al-Lamy, H. A. (2018). The determinants of E-commerce quality on small business performance in Iraq case study from ceramic industry. *Journal of Advanced Research in Dynamical and Control Systems*, 10(2 Special Issue).
- Ausat, A. M. A., Astuti, E. S., & Wilopo. (2022). Analysis Of Factors That Influence On E-Commerce Adoption And Their Impacts For Sme Performance In Subang District. *Jurnal Teknologi Informasi Dan Ilmu Komputer (JTIK)*, 9(2).
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1). <https://doi.org/10.1177/014920639101700108>
- Bergek, A., & Norrman, C. (2008). Incubator best practice: A framework. *Technovation*, 28(1–2). <https://doi.org/10.1016/j.technovation.2007.07.008>
- Chibelushi, C., & Costello, P. (2009). Challenges facing W. Midlands ICT-oriented SMEs. *Journal of Small Business and Enterprise Development*, 16(2). <https://doi.org/10.1108/14626000910956029>
- Chiu, W., & Cho, H. (2019). E-commerce brand: The effect of perceived brand leadership on consumers' satisfaction and repurchase intention on e-commerce websites. *Asia Pacific Journal of Marketing and Logistics*, 33(6). <https://doi.org/10.1108/APJML-10-2018-0403>
- Esses, D., Csete, M. S., & Németh, B. (2021). Sustainability and digital transformation in the visegrad group of central european countries. *Sustainability (Switzerland)*, 13(11). <https://doi.org/10.3390/su13115833>
- Ghozali, I. (2017). *Aplikasi analisis multivariate dengan program IBM SPSS 23. [Multivariate analysis application with the IBM SPSS 23 program]*. Semarang: Badan Penerbit Universitas Diponegoro(2016). [in Bahasa Indonesia]. R/PPM/2017 dated May 22nd.
- Hackett, S. M., & Dilts, D. M. (2004). A Systematic Review of Business Incubation Research. *The Journal of Technology Transfer*, 29(1). <https://doi.org/10.1023/b:jott.0000011181.11952.0f>
- Hamdi, K., Yadewani, D., & Wijaya, R. (2021). Media Sosial Instagram Dalam Mendukung Promosi Usaha Sebagai Sebuah Pilihan Atau Paksaan. *Jurnal Pustaka Mitra (Pusat Akses Kajian Mengabdi Terhadap Masyarakat)*, 1(2).

- Hess, T., Benlian, A., Matt, C., & Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive*, 15(2). <https://doi.org/10.4324/9780429286797-7>
- Johnson, H., Roberts, O., & Wilson, G. (2024). *Exploring the Economic Resilience of Small and Medium Enterprises (SMEs) During Financial Crises*.
- Kowerdziej, R., Parka, J., Krupka, J., Olifierczuk, M., Nowinowski-Kruszelnicki, E., Jaroszewicz, L., & Chojnowska, O. (2013). Dielectric properties of highly anisotropic nematic liquid crystals for tunable microwave components. *Applied Physics Letters*, 103(17). <https://doi.org/10.1063/1.4826504>
- Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2019). Digital entrepreneurship: A research agenda on new business models for the twenty-first century. In *International Journal of Entrepreneurial Behaviour and Research* (Vol. 25, Issue 2). <https://doi.org/10.1108/IJEBR-06-2018-0425>
- Liu, D. Y., Chen, S. W., & Chou, T. C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision*, 49(10). <https://doi.org/10.1108/00251741111183852>
- Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering*, 57, 339–343.
- Matt, D. T., & Rauch, E. (2020). SME 4.0: The role of small-and medium-sized enterprises in the digital transformation. In *Industry 4.0 for SMEs: Challenges, Opportunities and Requirements*. https://doi.org/10.1007/978-3-030-25425-4_1
- Mrugalska, B., & Ahmed, J. (2021). Organizational agility in industry 4.0: A systematic literature review. *Sustainability (Switzerland)*, 13(15). <https://doi.org/10.3390/su13158272>
- Mulyadi, M. (2013). PENELITIAN KUANTITATIF DAN KUALITATIF SERTA PEMIKIRAN DASAR MENGGABUNGKANNYA. *Jurnal Studi Komunikasi Dan Media*, 15(1). <https://doi.org/10.31445/jskm.2011.150106>
- Napitu, U., Corry, Sinurat, A., Harianja, T., Ease Arent, Mardiani, Nasution, A. M., & Napitu, H. (2023). SOSIALISASI PERAN PERGURUAN TINGGI DAN AKADEMISI SEBAGAI INKUBATOR BISNIS DALAM PENGUATAN KOPERASI SEBAGAI LEMBAGA EKONOMI KERAKYATAN MENUJU KOPERASI MODERN BAGI PELAKU UKM DI SUMATERA UTARA. *Jurnal Pengabdian Masyarakat Sapangambe Manoktok Hitei*, 2(1). <https://doi.org/10.36985/jpmsm.v2i1.503>
- Nazaruddin, I., Utami, E. R., & Rahmawati, E. (2024). Digitalization Challenges for SMEs: A Systematic Literature Review Perspective and Future Research. *JBTI: Jurnal Bisnis: Teori Dan Implementasi*, 15(1), 15–43.
- Opland, L. E., Pappas, I. O., Engesmo, J., & Jaccheri, L. (2022). Employee-driven digital innovation: A systematic review and a research agenda. *Journal of Business Research*, 143. <https://doi.org/10.1016/j.jbusres.2022.01.038>
- Phan, P. H., Siegel, D. S., & Wright, M. (2005). Science parks and incubators: Observations, synthesis and future research. *Journal of Business Venturing*, 20(2). <https://doi.org/10.1016/j.jbusvent.2003.12.001>
- Plekhanov, D., Franke, H., & Netland, T. H. (2023). Digital transformation: A review and research agenda. *European Management Journal*, 41(6). <https://doi.org/10.1016/j.emj.2022.09.007>
- Prasanna, R. P. I. R., Jayasundara, J. M. S. B., Gamage, S. K. N., Ekanayake, E. M. S., Rajapakshe, P. S. K., & Abeyrathne, G. A. K. N. J. (2019). Sustainability of SMEs in the competition: A systemic review on technological challenges and SME performance. In *Journal of Open Innovation: Technology, Market, and Complexity* (Vol. 5, Issue 4). <https://doi.org/10.3390/joitmc5040100>
- Priyatno, D. (2011). *Buku saku analisis statistik data SPSS*. Media Pressindo.
- Putri, P. L., & Widadi, B. (2024). Analisis Strategi Bisnis Dalam Upaya Meningkatkan Profitabilitas UMKM AspiKmas Kabupaten Banyumas. *Jurnal Ecodemica: Jurnal Ekonomi Manajemen Dan Bisnis*, 8(2), 74–81.

- Rodrigues, R. I., Lopes, P., & Varela, M. (2021). Factors affecting impulse buying behavior of consumers. *Frontiers in Psychology*, 12, 697080.
- Sari, M., Rachman, H., Juli Astuti, N., Win Afgani, M., & Abdullah Siroj, R. (2022). Explanatory Survey dalam Metode Penelitian Deskriptif Kuantitatif. *Jurnal Pendidikan Sains Dan Komputer*, 3(01). <https://doi.org/10.47709/jpsk.v3i01.1953>
- Sekaran, U. (2016). *Research methods for business: A skill building approach*. John Wiley & Sons.
- Soni, G., Kumar, S., Mahto, R. V., Mangla, S. K., Mittal, M. L., & Lim, W. M. (2022). A decision-making framework for Industry 4.0 technology implementation: The case of FinTech and sustainable supply chain finance for SMEs. *Technological Forecasting and Social Change*, 180. <https://doi.org/10.1016/j.techfore.2022.121686>
- Stephens, S., & Miller, K. (2022). Business incubation as a community of practice: an emergent cultural web. *Entrepreneurship and Regional Development*, 34(9–10). <https://doi.org/10.1080/08985626.2022.2112761>
- Sugiyono, P. D. (2018). Quantitative, qualitative, and combination research methods (Mixed methods). *Bandung: Alfabeta CV*.
- Surya, B., Menne, F., Sabhan, H., Suriani, S., Abubakar, H., & Idris, M. (2021). Economic growth, increasing productivity of smes, and open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1). <https://doi.org/10.3390/joitmc7010020>
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7). [https://doi.org/10.1002/\(SICI\)1097-0266\(199708\)18:7<509::AID-SMJ882>3.0.CO;2-Z](https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z)
- Vial, S., & Baudoin, P. (2019). Being and the screen: How the digital changes perception: Published in one volume with A Short Treatise on Design. In *Design thinking, design theory*.
- Westerman, G., & Bonnet, D. (2014). Turning Technology into Business. *Harvard Business Review Press*, 256.
- White, H. C. (2008). Identity and Control: How Social Formations Emerge. In *Practice*.
- Widagdo, S., Ratnasari, E., & Mandala, S. (2019). INTERNAL FACTOR ANALYSIS IN MANAGEMENT CONTROL SYSTEM DESIGN WITH ORGANIZATIONAL OBJECTIVES AS INTERVENING VARIABLES IN BLOOD TRANSFUSION UNITPMI JEMBER. *Sinergi: Jurnal Ilmiah Ilmu Manajemen*, 9(2).
- Yan, L., & Musika, C. (2018). *The social media and SMEs business growth: How can SMEs incorporate social media*.
- Yusuf, M., 'Ardhuha, J., & Hikmawati, H. (2022). Pengembangan Perangkat Pembelajaran Model Problem Based Learning untuk Meningkatkan Pemahaman Konsep Fisika dan Kemampuan Berpikir Kritis Peserta Didik. *Jurnal Ilmiah Profesi Pendidikan*, 7(2). <https://doi.org/10.29303/jipp.v7i2.457>
- Zhou, H., & Zondo, R. W. D. (2023). THE ROLE OF BUSINESS INCUBATION PROGRAMMES ON THE PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN SOUTH AFRICA. *The Seybold Report*, 18(5).

**4. Bukti Konfirmasi Review
dan Hasil Review Pertama
(26 Maret 2025)**

3441-Turnitin

by Check 1

Submission date: 24-May-2025 10:55AM (UTC+0700)

Submission ID: 2564382678

File name: 3441-Turnitin.docx (185.18K)

Word count: 4672

Character count: 28621

The Impact of Digital Transformation and Business Incubation on Small and Medium Enterprises (SMEs) Business Performance

ABSTRACT

In the digital era, digital transformation and business incubation are key factors in improving the performance of Small and Medium Enterprises (SMEs) in Indonesia. This research uses an explanatory quantitative approach to analyze the influence of these two aspects on 200 SMEs in Indonesia that have adopted digital technology and participated in incubation programs. Data were collected through questionnaires and analyzed using multiple linear regression. The results of the study show that digital transformation has a significant impact on SME business performance, through the use of e-commerce, digital management systems, and social media, increasing operational efficiency and market reach. Incubation programs also play an important role in improving performance by providing training, mentoring, and access to business networks. The synergy between digital transformation and business incubation has been shown to significantly improve performance.

Keywords: Digital transformation, Business incubation, SMEs business performance

INTRODUCTION

Digital transformation has emerged as a significant global phenomenon that is fundamentally reshaping the business landscape. In an era marked by the rapid evolution of information and communication technologies, digital transformation has moved from being an optional endeavor to a critical strategic imperative for all business entities, including Small and Medium Enterprises (SMEs). Digital transformation can play a significant role in achieving the SDGs. Digital transformation is recognized for its significant role in advancing the sustainable development goals (SDGs) through the use of technologies such as artificial intelligence, cloud computing, and the Internet of Things (Plekhanov et al., 2023). In addition, digital transformation can effectively contribute to the achievement of SDGs, generating new opportunities and improving economic, environmental and social aspects (Esses et al., 2021). The Sustainable Development Goals (SDG) are a global agenda agreed upon by 193 UN member states in 2015. The SDGs consist of 17 goals and 169 targets aimed at achieving sustainable development by 2030 (Wijaya et al., 2024).

Digital transformation can help SMEs to improve their performance, which can ultimately contribute to achieving SDGs, namely SDG 1 (Eradicating Poverty) and SDG 8 (Decent Work and Economic Growth). Then, even though Industry 4.0 technology has the potential to improve business performance, several studies warn of the challenges that small and medium enterprises (SMEs) may face during the adoption of this technology (Nazaruddin et al., 2024; Soni et al., 2022). SMEs often face constraints related to resource availability, market access, and technological capabilities, adoption of digital transformation can serve as an important mechanism for survival and achieving sustainable growth in an increasingly competitive business environment.

At this time, SMEs to increase their competitiveness in today's business, SMEs must effectively utilize information technology and develop and utilize their capabilities and competencies (Nazaruddin et al., 2024; Prasanna et al., 2019; Rodrigues et al., 2021; Yusuf et al., 2022). Furthermore, it is very important to improve corporate strategy by using information technology and optimizing work processes (Mrugalska & Ahmed, 2021) which involves utilizing computer systems and improving business performance in addressing market demands (Chiu & Cho, 2019; Mrugalska & Ahmed, 2021; Surya et al., 2021). The importance of information technology in business is widely recognized (Kowrdziej et al., 2013). Digitalization is a multifaceted phenomenon that encompasses various dimensions, including digital entrepreneurship, digital strategy, digital processes, and digital education (Kraus et al., 2019).

Beyond the scope of digital transformation, business incubation contributes significantly to the growth and performance of small and medium enterprises (SMEs). Business incubation facilitates access to critical resources that these firms may not have otherwise, including financial support, managerial expertise, professional networks, and opportunities for training and development. As a result, business incubation builds a stronger foundation for SMEs to start, operate, and expand their businesses more effectively. Technology and organization positively influence e-commerce adoption and SME performance (Ausat et al., 2022). Incubated firms outperform non-incubated firms due to tailored business support services. Incubated firms benefit from more employees, not incubated from the owner's experience (Zhou & Zondo, 2023). Business incubators support the growth and development of SMEs in developing countries (Napitu et al., 2023).

The integration of digital transformation and business incubation presents significant opportunities to improve the performance of small and medium enterprises (SMEs). Digital transformation facilitates increased operational efficiency, expands market accessibility, and strengthens competitiveness through innovation in products and services (Putri & Widadi, 2024). In contrast, business incubation offers critical support that optimizes the advantages of digital transformation, enabling SMEs not only to adapt to new technologies but also to take full advantage of contemporary technological capabilities.

The benefits of digital transformation and business incubation for small and medium enterprises are clear. However, challenges remain. There is a digital divide, a lack of skilled workers, and strong resistance to change. This study seeks to understand how digital transformation and business incubation affect the performance of SMEs. The purpose of this study is to find critical factors that lead to success and offer practical strategies for SMEs to improve their performance in this new digital era.

This study seeks to understand how digital transformation and business incubation programs affect the performance of small and medium enterprises. By examining the relationship between these factors and business success, the aim is to uncover ways for SMEs to use digital advancements and incubation support to strengthen their competitiveness and ensure their survival in a changing economic landscape.

LITERATURE REVIEW

Digital transformation

The concept of digital transformation is formed by the merger of personal and corporate IT environments and summarizes the transformational effects of new digital technologies such as social, mobile, analytical, cloud and Internet of Things (SMACIT) technologies (White, 2008). In a broader sense, digital transformation is presented as the integration of digital technologies and business processes in the digital economy (Liu et al., 2011). A comparatively unlimited view sees it as the use of innovation to improve the execution or reach of a business radically (Westerman & Bonnet, 2014). A more accurate recognition under the influence of digital transformation implies three aspects of the organization: from the outside, with the improvement of the client experience and changes in its entire life cycle; inside, the impact on business goals, basic leadership and hierarchical structures; and in general, when all parts and business opportunities are affected, it usually leads to completely new business models (Hess et al., 2016).

Digital transformation is the act of integrating digital technology into every part of a business. Digital transformation changes the way organizations work, think, and serve customers. In this change, everything changes. Old ways are replaced by new methods that are scalable and provide services (Vial & Baudoin, 2019). Digital transformation is about using new tools. E-commerce, social media, big data, and cloud computing are all part of digital transformation. All of these help businesses work better, create new ideas, and stay ahead of the competition (C. Matt et al., 2015).

According to Rogers' (2003) innovation adoption theory, SMEs' decisions to adopt digital technology are influenced by various factors, including perceived relative advantage, compatibility with existing business processes, complexity, trial, and observation of results. Digital transformation can also be understood through the Resource-Based View (RBV) perspective, where digital technology is viewed as a strategic resource that can generate competitive advantage if managed properly (Barney, 1991; Widagdo et al., 2019). Meanwhile, the current phenomenon of internet utilization for SMEs has become a basic need to improve their business. Small and medium enterprises (SMEs) that use social media marketing can reach more customers and manage their client relationships more effectively (Yan & Musika, 2018). Other researchers also explain that e-commerce facilitates the relationship between companies and their clients, allowing companies to build stronger relationships with them (Alawi et al.,

2018). Furthermore, Instagram social media can help business actors to promote the products they produce so that they can quickly be known to many people (Hamdi et al., 2021).

But the road to implementing digital technology is not without obstacles. Small and medium-sized companies struggle with tight budgets, lack of digital knowledge, and reluctance to embrace change (Chibelushi & Costello, 2009). The success of digital transformation in small and medium-sized companies depends on their strength to face challenges. They must integrate digital technology into their business strategy with purpose and clarity.

Business incubation

Business incubation is a program designed to support the growth and development of SMEs by providing various resources, such as funding, mentoring, training, and access to a broad business network. The definition of business incubation presented in the document "Definition of Business Incubation" emphasizes that business incubators not only provide structural support to SMEs but also act as catalysts in accelerating business growth through various interventions focused on the specific needs of small businesses (Stephens & Miller, 2022).

In the digital era, the function of business incubation is becoming increasingly important because digital transformation requires skills and knowledge that may not be possessed by all entrepreneurs. Business incubation can help bridge this gap by providing access to the latest technologies and assisting SMEs in the process of digitizing their businesses. Business incubators also provide the training needed to master digital tools and implement them in business operations, which can ultimately improve the efficiency and performance of SMEs as a whole (Opland et al., 2022).

Business incubation helps start-ups and small businesses in their early stages. Business incubation provides the support they need to grow and succeed over time (Hackett & Dilts, 2004). Business incubation is all about helping new ventures. Business incubation offers mentorship in management, teaches entrepreneurial skills, connects people to networks, and helps them find the funding they need (Phan et al., 2005). In the small business world, incubation serves as a lifeline. Incubation lightens the burden of scarce resources and reduces the chances of failure. With mentorship and support, incubation creates a path forward.

SME business performance

SMEs business performance covers various aspects, such as achieving financial targets, customer satisfaction, operational efficiency, and continuous innovation. This definition is presented in the document "Definition of SME Business Performance," which emphasizes that business performance is not only measured from the financial aspect but also from how SMEs are able to maintain customer satisfaction and continue to innovate to stay relevant in the market (Mulyadi, 2013).

In the digital era, SMEs business performance is increasingly determined by their ability to adopt and utilize digital technology. SMEs that successfully integrate digital technology into their operations tend to be more efficient and able to offer products or services that are more in line with market needs. In addition, continuous innovation through the use of technology is also an important factor in maintaining competitive advantage and improving business performance in the long term (Johnson et al., 2024).

SME business performance in the digital era is highly dependent on their ability to utilize digital technology as a tool to improve operational efficiency, meet customer needs, and continue to innovate. Thus, measuring SME business performance must include not only the financial aspect but also their ability to adapt to technological changes and dynamic markets.

METHODS

This research uses a quantitative approach with an explanatory design. Explanatory research aims to explain the relationship between two or more symptoms or variables and explain the causes of an event (Sari et al., 2022). This research will explain the causal relationship between the independent variables (digital transformation and business incubation) and the dependent variable (SME business performance).

The population in this study were all SMEs in Indonesia that have implemented digital technology in their operational activities and have participated in a business incubation program. The sampling technique used was purposive sampling, which is a sampling method with certain considerations

(Sugiyono, 2018). The criteria used to select the sample were: SMEs that have implemented digital technology for at least two years; SMEs that have participated in a business incubation program for at least one year; and SMEs who are willing to participate in this research.

The techniques used are Validity Test, Reliability Test, Normality Test, Multicollinearity Test, Heteroscedasticity Test, Multiple Linear Regression Analysis, F Test and t Test. The description is as follows:

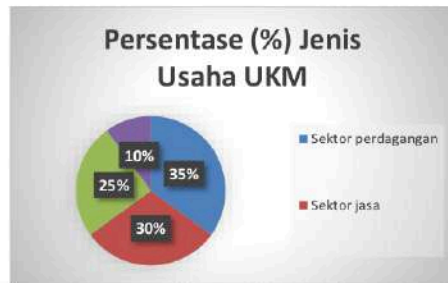
- ✓ Validity test is used to measure the validity of a questionnaire. Validity test is done by correlating each statement with the total score for each variable. SPSS software is also used in this test.
- ✓ Reliability test, reliability is a measurement that shows the extent to which the measurement is without bias and therefore guarantees measurement consistency over time and at various points on the instrument (Sekaran, 2016).
- ✓ The normality test aims to test whether in a regression model the dependent variable, independent variable or both have a normal distribution or not. A good regression model has a normal or near-normal data distribution. There are 2 ways to detect whether the residual is normally distributed or not, namely by graphical analysis and statistical tests (Ghozali, 2017).
- ✓ The multicollinearity test aims to test whether the regression model finds a correlation between one or all independent variables. The guideline for a regression model that is free from multicollinearity is to have a tolerance value of more than 0.1. The VIF limit is 10, if the VIF value is below 10, then there is no multicollinearity (Ghozali, 2017).
- ✓ This heteroscedasticity test is carried out to determine whether in the regression model there is a quality of variance from the residuals of one observation to another (Ghozali, 2017).
- ✓ Multiple linear regression analysis is a regression that has one dependent variable and two or more independent variables (Sugiyono, 2018).
The regression model used is as follows:
$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e$$

Description:
 - Y is the dependent variable (SME business performance),
 - α is a constant,
 - β_1 and β_2 are the regression coefficients for each independent variable,
 - X_1 is the digital transformation variable,
 - X_2 is the business incubation variable,
 - e is the error term.
- ✓ Hypothesis testing is done using the F test to see the significance of the overall regression model and the t test to see the significance of the influence of each independent variable on the dependent variable. The null hypothesis (H_0) is rejected if the p-value < 0.05 , which indicates that the independent variable has a significant influence on the dependent variable (Priyatno, 2011).

RESULTS

Statistical Description of Respondents

This study involved 200 SMEs that met the inclusion criteria, namely SMEs that have implemented digital technology for at least two years and have participated in a business incubation program for at least one year. Of the 200 questionnaires distributed, all were returned and filled out, so the response rate was 100%. Below is a description of SMEs from the research sample.



Picture.1 Percentage of Types of SMEs Businesses Sampled
Source: (Data Analysis, 2024)

Based on the diagram, the trade sector is the most SME business activity in Indonesia, which is 35% of other types of SME businesses. While the lowest type of business is the agricultural and creative sectors, which is 10% of other types of businesses. Then if measured by the number of employees is as follows: Most SMEs are small businesses with between 10 and 50 employees (70%). The rest are micro businesses with less than 10 employees (20%) and medium businesses with more than 50 employees (10%).

The SMEs used as samples are spread across various provinces in Indonesia, with the highest concentration in West Java (25%), DKI Jakarta (20%), East Java (15%), and other provinces (40%).

2. Validity and Reliability Test

Before further analysis was carried out, validity and reliability tests were carried out on the research instruments.

- ✓ **Validity Test:** The results of the validity test show that all questionnaire items have a Pearson Product Moment correlation value above 0.3, which means that all items are valid.
- ✓ **Reliability Test:** The results of the reliability test show a Cronbach's Alpha value of 0.89 for the digital transformation variable, 0.87 for the business incubation variable, and 0.91 for the SME business performance variable. All of these values are greater than 0.70, so the instrument is considered reliable.

3. Classical Assumption Test

- ✓ **Normality Test:** The results of the Kolmogorov-Smirnov test indicate that the residual data is normally distributed with a p value > 0.05.
- ✓ **Multicollinearity Test:** The VIF values for all independent variables are below 10 (VIF < 2), indicating no multicollinearity.
- ✓ **Heteroscedasticity Test:** The scatterplot between the residuals and predicted values shows a random pattern, indicating no heteroscedasticity problem.
- ✓ **Autocorrelation Test:** The Durbin-Watson value is 1.98, indicating no significant autocorrelation.

4. Multiple Linear Regression Analysis

The regression model used to test the influence of digital transformation and business incubation on SME business performance is as follows:

$$Y = 1,24 + 0,45X_1 + 0,38X_2 \quad Y = 1,24 + 0,45X_1 + 0,38X_2$$

Description:

- ✓ Y is SMEs business performance,
- ✓ X₁ is digital transformation,
- ✓ X₂ is business incubation.

5. F Test Results

The F-count value is 45.67 with a p value <0.001. This shows that the overall regression model is significant and both independent variables jointly affect the performance of SME businesses.

6. t Test Results

✓ Digital Transformation (X1X 1X1): Regression coefficient $\beta_1=0.45$ with a t-value of 5.12 and a p-value <0.001. This shows that digital transformation has a significant and positive influence on SME business performance.

Business Incubation (X2X 2X2): Regression coefficient $\beta_2=0.38$ with a t-value of 4.76 and a p-value <0.001. This shows that business incubation also has a significant and positive influence on SME business performance.

DISCUSSION

Based on the results of the study, it shows that digital transformation has a positive and significant impact on SME business performance. SMEs that adopt digital technology, such as the use of e-commerce, digital-based management systems, and social media, experience significant improvements in operational efficiency, market expansion, and product innovation. This shows that SMEs that adopt digital technology can achieve better business performance compared to SMEs that have not implemented digital transformation. This finding is consistent with previous studies showing that digital transformation can increase the competitiveness of SMEs by expanding market access and increasing interaction with customers (D. T. Matt & Rauch, 2020; Vial & Baudoin, 2019). In the Indonesian context, where SMEs often face limited access to markets and resources, digital transformation offers an effective solution to overcome these challenges.

Business incubation has also been shown to have a positive and significant impact on SME business performance. Business incubation programs that include training, mentoring, and access to business networks help SMEs develop innovation capacity, marketing strategies, and financial management which in turn have a positive impact on their business performance. Participation in a business incubation program provides the necessary support for SMEs to adapt to market and technological changes, and improve their ability to face increasingly fierce competition. These results are in line with research by Bergek and Norrman (2008), which states that business incubation can reduce business failure rates by providing the right support at the early stages of business development (Bergek & Norrman, 2008). Another interesting finding from this study is the strong synergy between digital transformation and business incubation in improving SME performance. SMEs that combine digital transformation with participation in a business incubation program show better performance compared to SMEs that only focus on one aspect. This synergy can be explained by the dynamic capability theory (Teece et al., 1997) which states that companies that can integrate internal capabilities (in this case digital transformation) with external resources (business incubation) will have a stronger competitive advantage. In practice, business incubation can help SMEs optimize the use of digital technology by providing the right direction and support so that digital transformation can be carried out more effectively and efficiently.

The findings of this study have several important managerial implications:

- The Importance of Digital Transformation: SMEs must continue to drive digital transformation as part of their business strategy to improve efficiency, innovation, and competitiveness. The government and related institutions also need to provide support, such as training and access to technology, to encourage digital adoption among SMEs.
- The Important Role of Business Incubation: Business incubation programs need to be expanded and improved to provide more comprehensive support to SMEs especially in facing the challenges of the digital era. Effective business incubation can help SMEs not only survive but also grow in a competitive market.
- Collaboration for Synergy: To achieve optimal results, SMEs need to combine digital transformation with active participation in business incubation programs. Collaboration between various parties, including the government, business incubation providers, and the private sector, is essential to create an ecosystem that supports the development of technology-based SMEs.

CONCLUSION

Based on the results of research that has been conducted regarding the impact of digital transformation and business incubation on SME business performance, several important points can be concluded as follows:

- ✓ There is a positive and significant influence between digital transformation on SME business performance.
- ✓ Participation in business incubation programs also shows a positive and significant influence on SME business performance.
- ✓ Another important finding is the strong synergy between digital transformation and business incubation, SMEs that combine these two factors simultaneously show superior business performance and can increase the competitiveness and sustainability of SMEs in a dynamic business environment.
- ✓ Research also shows that to maximize the positive impact of digital transformation and business incubation, ongoing support is needed from various parties, including the government, incubation providers, and the private sector. Strong collaboration between various stakeholders can create a conducive ecosystem for the development of technology-based SMEs.

REFERENCES

- Alawi, M., Rashid, N., Al-Shami, S. A., & Al-Lamy, H. A. (2018). The determinants of E-commerce quality on small business performance in Iraq case study from ceramic industry. *Journal of Advanced Research in Dynamical and Control Systems*, 10(2 Special Issue).
- Ausat, A. M. A., Astuti, E. S., & Wilopo. (2022). Analysis Of Factors That Influence On E-Commerce Adoption And Their Impacts For Sme Performance In Subang District. *Jurnal Teknologi Informasi Dan Ilmu Komputer (JTIIK)*, 9(2).
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1). <https://doi.org/10.1177/014920639101700108>
- Bergek, A., & Norrman, C. (2008). Incubator best practice: A framework. *Technovation*, 28(1–2). <https://doi.org/10.1016/j.technovation.2007.07.008>
- Chibelushi, C., & Costello, P. (2009). Challenges facing W. Midlands ICT-oriented SMEs. *Journal of Small Business and Enterprise Development*, 16(2). <https://doi.org/10.1108/14626000910956029>
- Chiu, W., & Cho, H. (2019). E-commerce brand: The effect of perceived brand leadership on consumers' satisfaction and repurchase intention on e-commerce websites. *Asia Pacific Journal of Marketing and Logistics*, 33(6). <https://doi.org/10.1108/APJML-10-2018-0403>
- Esses, D., Cséte, M. S., & Németh, B. (2021). Sustainability and digital transformation in the visegrad group of central european countries. *Sustainability (Switzerland)*, 13(11). <https://doi.org/10.3390/su13115833>
- Ghozali, I. (2017). *Aplikasi analisis multivariate dengan program IBM SPSS 23 [Multivariate analysis application with the IBM SPSS 23 program]*. Semarang: Badan Penerbit Universitas Diponegoro(2016). [in Bahasa Indonesia]. R/PPM/2017 dated May 22nd.
- Hackett, S. M., & Dilts, D. M. (2004). A Systematic Review of Business Incubation Research. *The Journal of Technology Transfer*, 29(1). <https://doi.org/10.1023/b:jott.0000011181.11952.0f>
- Hamdi, K., Yadewani, D., & Wijaya, R. (2021). Media Sosial Instagram Dalam Mendukung Promosi Usaha Sebagai Sebuah Pilihan Atau Paksaan. *Jurnal Pustaka Mitra (Pusat Akses Kajian Mengabdikan Terhadap Masyarakat)*, 1(2).
- Hess, T., Benlian, A., Matt, C., & Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive*, 15(2). <https://doi.org/10.4324/9780429286797-7>
- Johnson, H., Roberts, O., & Wilson, G. (2024). *Exploring the Economic Resilience of Small and Medium Enterprises (SMEs) During Financial Crises*.
- Kowordziej, R., Parka, J., Krupka, J., Olifierczuk, M., Nowinowski-Kruszelnicki, E., Jaroszewicz, L., & Chojnowska, O. (2013). Dielectric properties of highly anisotropic nematic liquid crystals for tunable microwave components. *Applied Physics Letters*, 103(17). <https://doi.org/10.1063/1.4826504>

- Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2019). Digital entrepreneurship: A research agenda on new business models for the twenty-first century. In *International Journal of Entrepreneurial Behaviour and Research* (Vol. 25, Issue 2). <https://doi.org/10.1108/IJEBR-06-2018-0425>
- Liu, D. Y., Chen, S. W., & Chou, T. C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision*, 49(10). <https://doi.org/10.1108/00251741111183852>
- Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering*, 57, 339–343.
- Matt, D. T., & Rauch, E. (2020). SME 4.0: The role of small-and medium-sized enterprises in the digital transformation. In *Industry 4.0 for SMEs: Challenges, Opportunities and Requirements*. https://doi.org/10.1007/978-3-030-25425-4_1
- Mrugalska, B., & Ahmed, J. (2021). Organizational agility in industry 4.0: A systematic literature review. *Sustainability (Switzerland)*, 13(15). <https://doi.org/10.3390/su13158272>
- Mulyadi, M. (2013). PENELITIAN KUANTITATIF DAN KUALITATIF SERTA PEMIKIRAN DASAR MENGGABUNGKANNYA. *Jurnal Studi Komunikasi Dan Media*, 15(1). <https://doi.org/10.31445/jskm.2011.150106>
- Napitu, U., Corry, Sinurat, A., Harianja, T., Ease Arent, Mardiani, Nasution, A. M., & Napitu, H. (2023). SOSIALISASI PERAN PERGURUAN TINGGI DAN AKADEMISI SEBAGAI INKUBATOR BISNIS DALAM PENGUATAN KOPERASI SEBAGAI LEMBAGA EKONOMI KERAKYATAN MENUJU KOPERASI MODERN BAGI PELAKU UKM DI SUMATERA UTARA. *Jurnal Pengabdian Masyarakat Sapangambe Manoktok Hitei*, 2(1). <https://doi.org/10.36985/jpmism.v2i1.503>
- Nazaruddin, I., Utami, E. R., & Rahmawati, E. (2024). Digitalization Challenges for SMEs: A Systematic Literature Review Perspective and Future Research. *JBTI: Jurnal Bisnis: Teori Dan Implementasi*, 15(1), 15–43.
- Opland, L. E., Pappas, I. O., Engesmo, J., & Jaccheri, L. (2022). Employee-driven digital innovation: A systematic review and a research agenda. *Journal of Business Research*, 143. <https://doi.org/10.1016/j.jbusres.2022.01.038>
- Phan, P. H., Siegel, D. S., & Wright, M. (2005). Science parks and incubators: Observations, synthesis and future research. *Journal of Business Venturing*, 20(2). <https://doi.org/10.1016/j.jbusvent.2003.12.001>
- Plekhanov, D., Franke, H., & Netland, T. H. (2023). Digital transformation: A review and research agenda. *European Management Journal*, 41(6). <https://doi.org/10.1016/j.emj.2022.09.007>
- Prasanna, R. P. I. R., Jayasundara, J. M. S. B., Gamage, S. K. N., Ekanayake, E. M. S., Rajapakshe, P. S. K., & Abeyrathne, G. A. K. N. J. (2019). Sustainability of SMEs in the competition: A systemic review on technological challenges and SME performance. In *Journal of Open Innovation: Technology, Market, and Complexity* (Vol. 5, Issue 4). <https://doi.org/10.3390/joitmc5040100>
- Priyatno, D. (2011). *Buku saku analisis statistik data SPSS*. Media Pressindo.
- Putri, P. L., & Widadi, B. (2024). Analisis Srtrategi Bisnis Dalam Upaya Meningkatkan Profitabilitas UMKM Aspiqmas Kabupaten Banyumas. *Jurnal Ecodemica: Jurnal Ekonomi Manajemen Dan Bisnis*, 8(2), 74–81.
- Rodrigues, R. I., Lopes, P., & Varela, M. (2021). Factors affecting impulse buying behavior of consumers. *Frontiers in Psychology*, 12, 697080.
- Sari, M., Rachman, H., Juli Astuti, N., Win Afgani, M., & Abdullah Siroj, R. (2022). Explanatory Survey dalam Metode Penelitian Deskriptif Kuantitatif. *Jurnal Pendidikan Sains Dan Komputer*, 3(01). <https://doi.org/10.47709/jpsk.v3i01.1953>
- Sekaran, U. (2016). *Research methods for business: A skill building approach*. John Wiley & Sons.
- Soni, G., Kumar, S., Mahto, R. V., Mangla, S. K., Mittal, M. L., & Lim, W. M. (2022). A decision-making framework for Industry 4.0 technology implementation: The case of FinTech and sustainable supply chain finance for SMEs. *Technological Forecasting and Social Change*, 180. <https://doi.org/10.1016/j.techfore.2022.121686>

- Stephens, S., & Miller, K. (2022). Business incubation as a community of practice: an emergent cultural web. *Entrepreneurship and Regional Development*, 34(9–10). <https://doi.org/10.1080/08985626.2022.2112761>
- Sugiyono, P. D. (2018). Quantitative, qualitative, and combination research methods (Mixed methods). *Bandung: Alfabeta CV*.
- Surya, B., Menne, F., Sabhan, H., Suriani, S., Abubakar, H., & Idris, M. (2021). Economic growth, increasing productivity of smes, and open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1). <https://doi.org/10.3390/joitmc7010020>
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7). [https://doi.org/10.1002/\(SICI\)1097-0266\(199708\)18:7<509::AID-SMJ882>3.0.CO;2-Z](https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z)
- Vial, S., & Baudoin, P. (2019). Being and the screen: How the digital changes perception: Published in one volume with A Short Treatise on Design. In *Design thinking, design theory*.
- Westerman, G., & Bonnet, D. (2014). Turning Technology into Business. *Harvard Business Review Press*, 256.
- White, H. C. (2008). Identity and Control: How Social Formations Emerge. In *Practice*.
- Widagdo, S., Ratnasari, E., & Mandala, S. (2019). INTERNAL FACTOR ANALYSIS IN MANAGEMENT CONTROL SYSTEM DESIGN WITH ORGANIZATIONAL OBJECTIVES AS INTERVENING VARIABLES IN BLOOD TRANSFUSION UNITPMI JEMBER. *Sinergi: Jurnal Ilmiah Ilmu Manajemen*, 9(2).
- Yan, L., & Musika, C. (2018). *The social media and SMEs business growth: How can SMEs incorporate social media*.
- Yusuf, M., 'Ardhuha, J., & Hikmawati, H. (2022). Pengembangan Perangkat Pembelajaran Model Problem Based Learning untuk Meningkatkan Pemahaman Konsep Fisika dan Kemampuan Berpikir Kritis Peserta Didik. *Jurnal Ilmiah Profesi Pendidikan*, 7(2). <https://doi.org/10.29303/jipp.v7i2.457>
- Zhou, H., & Zondo, R. W. D. (2023). THE ROLE OF BUSINESS INCUBATION PROGRAMMES ON THE PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN SOUTH AFRICA. *The Seybold Report*, 18(5).

3441-Turnitin

ORIGINALITY REPORT

30%

SIMILARITY INDEX

27%

INTERNET SOURCES

23%

PUBLICATIONS

12%

STUDENT PAPERS

PRIMARY SOURCES

1

Submitted to Banking Academy

Student Paper

2%

2

jurnal.unprimdn.ac.id

Internet Source

2%

3

media.neliti.com

Internet Source

1%

4

Submitted to Ajman University of Science and Technology

Student Paper

1%

5

dspace.uui.ac.id

Internet Source

1%

6

pns.mypolycc.edu.my

Internet Source

1%

7

journal.stieamkop.ac.id

Internet Source

1%

8

dinastipub.org

Internet Source

1%

9

Submitted to Sheffield Hallam University

Student Paper

1%

10

Submitted to University of London External System

Student Paper

1%

11

ejournal.stiepancasetia.ac.id

Internet Source

1%

12

www.researchgate.net

Internet Source

1 %

13

bircu-journal.com

Internet Source

1 %

14

ejournal.unsrat.ac.id

Internet Source

1 %

15

repository.uniba.ac.id

Internet Source

1 %

16

www.mdpi.com

Internet Source

1 %

17

Gunjan Soni, Satish Kumar, Raj V. Mahto, Sachin K. Mangla, M.L. Mittal, Weng Marc Lim. "A decision-making framework for Industry 4.0 technology implementation: The case of FinTech and sustainable supply chain finance for SMEs", Technological Forecasting and Social Change, 2022

Publication

<1 %

18

thebabe.stiebankbpdjateng.ac.id

Internet Source

<1 %

19

ebin.pub

Internet Source

<1 %

20

libweb.kpfu.ru

Internet Source

<1 %

21

Xiaowen Wu, Guangbin Cheng. "The Performance and Stability of Financial Institutions after Digital Transformation: The Importance of Regional Policies", Finance Research Letters, 2024

Publication

<1 %

22

ecosia.asia.ac.id

Internet Source

<1 %

23	eprints.dinus.ac.id Internet Source	<1 %
24	www.daicel.com Internet Source	<1 %
25	www.trijurnal.lemlit.trisakti.ac.id Internet Source	<1 %
26	Dorojatun Prihandono, Angga Pandu Wijaya, Bayu Wiratama, Widya Prananta, Syam Widia. "Digital transformation to enhance Indonesian SME performance: Exploring the impact of market competition and digital strategy", Problems and Perspectives in Management, 2024 Publication	<1 %
27	e-journal.uac.ac.id Internet Source	<1 %
28	Silvana Gashi, Denada Liça, Brunela Trebicka. "Digitalization and competitive advantage: Insights from manufacturing sector", Corporate and Business Strategy Review, 2024 Publication	<1 %
29	ieomsociety.org Internet Source	<1 %
30	Submitted to Bakke Graduate University Student Paper	<1 %
31	Submitted to University of Ulster Student Paper	<1 %
32	impakter.com Internet Source	<1 %
33	Honglan Jie, Leong Mow Gooi, Yanchun Lou. "Digital Maturity, Dynamic Capabilities and	<1 %

Innovation Performance in High-Tech SMEs",
International Review of Economics & Finance,
2025

Publication

34 Lukas Schnell, Elisabeth S.C. Berger. "Sharing and exchange dynamics in entrepreneurial spaces: a systematic literature review and conceptualization", Technological Forecasting and Social Change, 2025

Publication

35 Selsa Dima Yayang Sari, Lina Dameria Siregar, Parama Santati. "The Effect of Non-Physical Work Environment and Work Motivation on Oriflame Employee's Performance", KnE Social Sciences, 2024

Publication

36 firstcierapublisher.com

Internet Source

37 www.ncbi.nlm.nih.gov

Internet Source

38 Indira Rachmawati, Ratih Hendayani. "Managing Learning Organization in Industry 4.0", Routledge, 2020

Publication

39 eprints.umk.ac.id

Internet Source

40 pinpdf.com

Internet Source

41 press.um.si

Internet Source

42 www.journalmabis.org

Internet Source

43 Abdelghani Koura, Abdeslam Boudhar, Mohamed Oudgou. "Rebuilding prosperity: the role of public support in driving sustainable growth for Moroccan SMEs in the post-COVID-19 era", Management & Sustainability: An Arab Review, 2025

Publication

<1 %

44 Ahmed Chemseddine Bouarar, Smail Mouloudj, Kamel Mouloudj. "chapter 3 Digital Transformation", IGI Global, 2022

Publication

<1 %

45 Oscar Chrismadian Noventa. "MODERATING EFFECT OF MANAGERIAL AND PROFESSIONAL ASSISTANCE ON INNOVATION STRATEGY AND ACADEMIC SPIN-OFF MANAGEMENT", Airlangga Journal of Innovation Management, 2021

Publication

<1 %

46 Yoma Bagus Pamungkas, Yuwanto Yuwanto, Muhammad Adnan, Nurul Hasfi. "Political Knowledge and Its Effect on Voting Decisions: Generation Z Viewers of 'Dirty Vote' Documentary", Jurnal The Messenger, 2025

Publication

<1 %

47 gssrr.org

Internet Source

<1 %

48 jurnal.univpgri-palembang.ac.id

Internet Source

<1 %

49 ppmi.lt

Internet Source

<1 %

50 www-emerald-com-443.webvpn.sxu.edu.cn

Internet Source

<1 %

51 www.grafiati.com

Internet Source

<1 %

52

"Complex, Intelligent and Software Intensive Systems", Springer Science and Business Media LLC, 2021

Publication

<1 %

53

Konstantina Spanaki, Denis Dennehy, Thanos Papadopoulos, Rameshwar Dubey. "Data-driven digital transformation in operations and supply chain management", International Journal of Production Economics, 2025

Publication

<1 %

54

Serena Aktar, A. N. M. Jahangir Kabir. "A comprehensive study on sustainable entrepreneurship for cottage, micro, small, and medium enterprises in Bangladesh", European Journal of Sustainable Development Research, 2024

Publication

<1 %

55

Tan Yigitcanlar, Surabhi Pancholi, Niusha Esmaeilpoorarabi, Rosemary Adu-McVie. "Innovation District Planning - Concept, Framework, Practice", CRC Press, 2024

Publication

<1 %

56

gtg.webhost.uoradea.ro

Internet Source

<1 %

57

ijrrjournal.com

Internet Source

<1 %

58

journal.uinmataram.ac.id

Internet Source

<1 %

59

repository.maranatha.edu

Internet Source

<1 %

60

seajbel.com

Internet Source

<1 %

61

www.assumptionjournal.au.edu

Internet Source

<1 %

62

www.diva-portal.org

Internet Source

<1 %

63

www.ijser.org

Internet Source

<1 %

64

www.scielo.br

Internet Source

<1 %

65

K. Latha, E. Sulaiman, Siby Yohannan.
"Linkage of Digitalization and Perceived
Organizational Performance of Small and
Medium Enterprises", SDMIMD Journal of
Management, 2023

Publication

<1 %

66

Ana Carolina Ferreira Costa, Fernando Capelo
Neto, Maximilian Espuny, Aglaé Baptista
Torres da Rocha et al. "Digitalization of
customer service in small and medium-sized
enterprises: drivers for the development and
improvement", International Journal of
Entrepreneurial Behavior & Research, 2023

Publication

<1 %

67

Lalit Prasad, Anatoliy Goncharuk, Teddy Fauzi,
Hanna Doroshuk, Sri Sundari. "Sustainable
Smart Technology Businesses in Global
Economies - Proceedings of International
Conference on Sustainable Smartech
Businesses and SMEs across Global
Economies", Routledge, 2025

Publication

<1 %

Luis Velazquez. "Higher Education Institutions
as Leverage for Backing up SMEs' Efforts to
Meet SDG 9", Sustainability, 2025

Publication

<1 %

Exclude quotes On

Exclude matches Off

Exclude bibliography On

The Impact of Digital Transformation and Business Incubation on Small and Medium Enterprises (SMEs) Business Performance

ABSTRACT

In the digital era, digital transformation and business incubation are key factors in improving the performance of Small and Medium Enterprises (SMEs) in Indonesia. This research uses an explanatory quantitative approach to analyze the influence of these two aspects on 200 SMEs in Indonesia that have adopted digital technology and participated in incubation programs. Data were collected through questionnaires and analyzed using multiple linear regression. The results of the study show that digital transformation has a significant impact on SME business performance, through the use of e-commerce, digital management systems, and social media, increasing operational efficiency and market reach. Incubation programs also play an important role in improving performance by providing training, mentoring, and access to business networks. The synergy between digital transformation and business incubation has been shown to significantly improve performance.

Keywords: *Digital transformation, Business incubation, SMEs business performance*

INTRODUCTION

Digital transformation has become a global phenomenon that is significantly reshaping the business landscape. No longer a discretionary effort, digital transformation has evolved into a vital strategic imperative for all types of enterprises, including Small and Medium Enterprises (SMEs), particularly in an age marked by rapid advancements in information and communication technologies. Its influence extends beyond business performance and plays a key role in advancing the Sustainable Development Goals (SDGs). Technologies such as artificial intelligence, cloud computing, and the Internet of Things are instrumental in supporting the achievement of the SDGs, underscoring digital transformation's strategic relevance (Plekhanov et al., 2023). In addition to optimizing business efficiency, digital transformation contributes to social equity, environmental protection, and economic development, thus reinforcing its integral role in sustainable progress (Esses et al., 2021). The SDGs, established in 2015 by 193 member states of the United Nations, represent a universal blueprint to achieve sustainability by 2030. They encompass 17 goals and 169 specific targets, each aimed at fostering inclusive and equitable global development (Wijaya et al., 2024). In this context, digital transformation emerges not only as a business enabler but also as a fundamental driver in achieving long-term developmental and sustainability outcomes.

Digital transformation can help SMEs to improve their performance, which can ultimately contribute to achieving SDGs, namely SDG 1 (Eradicating Poverty) and SDG 8 (Decent Work and Economic Growth). Then, even though Industry 4.0 technology has the potential to improve business performance, several studies warn of the challenges that small and medium enterprises (SMEs) may face during the adoption of this technology (Nazaruddin et al., 2024; Soni et al., 2022). SMEs often face constraints related to resource availability, market access, and technological capabilities, adoption of digital transformation can serve as an important mechanism for survival and achieving sustainable growth in an increasingly competitive business environment.

At this time, SMEs to increase their competitiveness in today's business, SMEs must effectively utilize information technology and develop and utilize their capabilities and competencies (Nazaruddin et al., 2024; Prasanna et al., 2019; Rodrigues et al., 2021; Yusuf et al., 2022). Furthermore, it is very important to improve corporate strategy by using information technology and optimizing work processes (Mrugalska & Ahmed, 2021) which involves utilizing computer systems and improving business performance in addressing market demands (Chiu & Cho, 2019; Mrugalska & Ahmed, 2021; Surya et al., 2021). The importance of information technology in business is widely recognized (Kowerdziej et al., 2013). Digitalization is a multifaceted phenomenon that encompasses various

dimensions, including digital entrepreneurship, digital strategy, digital processes, and digital education (Kraus et al., 2019).

Beyond the scope of digital transformation, business incubation contributes significantly to the growth and performance of small and medium enterprises (SMEs). Business incubation facilitates access to critical resources that these firms may not have otherwise, including financial support, managerial expertise, professional networks, and opportunities for training and development. As a result, business incubation builds a stronger foundation for SMEs to start, operate, and expand their businesses more effectively. Technology and organization positively influence e-commerce adoption and SME performance (Ausat et al., 2022). Incubated firms outperform non-incubated firms due to tailored business support services. Incubated firms benefit from more employees, not incubated from the owner's experience (Zhou & Zondo, 2023). Business incubators support the growth and development of SMEs in developing countries (Napitu et al., 2023).

The integration of digital transformation and business incubation presents significant opportunities to improve the performance of small and medium enterprises (SMEs). Digital transformation facilitates increased operational efficiency, expands market accessibility, and strengthens competitiveness through innovation in products and services (Putri & Widadi, 2024). In contrast, business incubation offers critical support that optimizes the advantages of digital transformation, enabling SMEs not only to adapt to new technologies but also to take full advantage of contemporary technological capabilities.

The benefits of digital transformation and business incubation for small and medium enterprises are clear. However, challenges remain. There is a digital divide, a lack of skilled workers, and strong resistance to change. This study seeks to understand how digital transformation and business incubation affect the performance of SMEs. The purpose of this study is to find critical factors that lead to success and offer practical strategies for SMEs to improve their performance in this new digital era.

This study seeks to understand how digital transformation and business incubation programs affect the performance of small and medium enterprises. By examining the relationship between these factors and business success, the aim is to uncover ways for SMEs to use digital advancements and incubation support to strengthen their competitiveness and ensure their survival in a changing economic landscape.

LITERATURE REVIEW

Digital transformation

Digital transformation emerges from the convergence of personal and organizational IT environments, highlighting the transformative effects of advanced digital technologies such as cloud computing, social media, mobile platforms, analytics, and the Internet of Things—collectively known as SMACIT technologies (White, 2008). On a broader scale, digital transformation is described as the integration of digital technologies into core business operations, particularly within the digital economy context (Liu et al., 2011). From a more expansive viewpoint, it encompasses leveraging innovation to optimize organizational functions or to extend a company's global presence (Westerman & Bonnet, 2014). Hess et al. (2016) provide a more structured definition, emphasizing that digital transformation influences organizations on three critical levels: first, it modifies the organization's full lifecycle and enhances customer experiences externally; second, it affects internal aspects such as strategic objectives, decision-making processes, and organizational hierarchies; and finally, when transformation permeates all organizational layers and business functions, it often leads to the emergence of entirely new business models. These perspectives collectively underscore that digital transformation is not merely a technological upgrade but a strategic reconfiguration of business at all levels.

Digital transformation is the act of integrating digital technology into every part of a business. Digital transformation changes the way organizations work, think, and serve customers. In this change, everything changes. Old ways are replaced by new methods that are valuable and provide services (Vial & Baudoin, 2019). Digital transformation is about using new tools. E-commerce, social media, big data, and cloud computing are all part of digital transformation. All of these help businesses work better, create new ideas, and stay ahead of the competition (C. Matt et al., 2015).

According to Rogers' (2003) innovation adoption theory, SMEs' decisions to adopt digital technology are influenced by various factors, including perceived relative advantage, compatibility with existing business processes, complexity, trial, and observation of results. Digital transformation can also be understood through the Resource-Based View (RBV) perspective, where digital technology is viewed as a strategic resource that can generate competitive advantage if managed properly (Barney,

1991; Widagdo et al., 2019). Meanwhile, the current phenomenon of internet utilization for SMEs has become a basic need to improve their business. Small and medium enterprises (SMEs) that use social media marketing can reach more customers and manage their client relationships more effectively (Yan & Musika, 2018). Other researchers also explain that e-commerce facilitates the relationship between companies and their clients, allowing companies to build stronger relationships with them (Alawi et al., 2018). Furthermore, Instagram social media can help business actors to promote the products they produce so that they can quickly be known to many people (Hamdi et al., 2021).

But the road to implementing digital technology is not without obstacles. Small and medium-sized companies struggle with tight budgets, lack of digital knowledge, and reluctance to embrace change (Chibelushi & Costello, 2009). The success of digital transformation in small and medium-sized companies depends on their strength to face challenges. They must integrate digital technology into their business strategy with purpose and clarity.

Business incubation

Business incubation is a program designed to support the growth and development of SMEs by providing various resources, such as funding, mentoring, training, and access to a broad business network. The definition of business incubation presented in the document “Definition of Business Incubation” emphasizes that business incubators not only provide structural support to SMEs but also act as catalysts in accelerating business growth through various interventions focused on the specific needs of small businesses (Stephens & Miller, 2022).

In the digital era, the function of business incubation is becoming increasingly important because digital transformation requires skills and knowledge that may not be possessed by all entrepreneurs. Business incubation can help bridge this gap by providing access to the latest technologies and assisting SMEs in the process of digitizing their businesses. Business incubators also provide the training needed to master digital tools and implement them in business operations, which can ultimately improve the efficiency and performance of SMEs as a whole (Opland et al., 2022).

Business incubation helps start-ups and small businesses in their early stages. Business incubation provides the support they need to grow and succeed over time (Hackett & Dilts, 2004). Business incubation is all about helping new ventures. Business incubation offers mentorship in management, teaches entrepreneurial skills, connects people to networks, and helps them find the funding they need (Phan et al., 2005). In the small business world, incubation serves as a lifeline. Incubation lightens the burden of scarce resources and reduces the chances of failure. With mentorship and support, incubation creates a path forward.

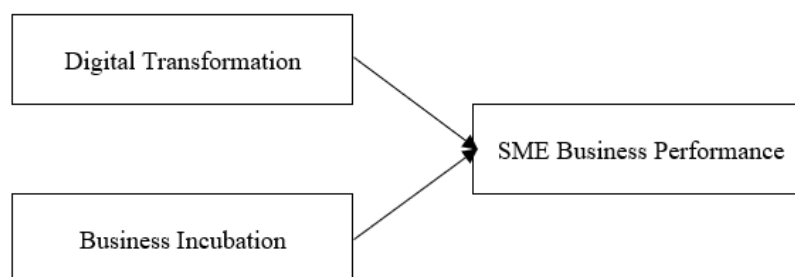


Figure 1. Research framework

SME business performance

SMEs business performance covers various aspects, such as achieving financial targets, customer satisfaction, operational efficiency, and continuous innovation. This definition is presented in the document “Definition of SME Business Performance,” which emphasizes that business performance is not only measured from the financial aspect but also from how SMEs are able to maintain customer satisfaction and continue to innovate to stay relevant in the market (Mulyadi, 2013).

In the digital era, SMEs business performance is increasingly determined by their ability to adopt and utilize digital technology. SMEs that successfully integrate digital technology into their operations tend to be more efficient and able to offer products or services that are more in line with market needs.

In addition, continuous innovation through the use of technology is also an important factor in maintaining competitive advantage and improving business performance in the long term (Johnson et al., 2024).

SME business performance in the digital era is highly dependent on their ability to utilize digital technology as a tool to improve operational efficiency, meet customer needs, and continue to innovate. Thus, measuring SME business performance must include not only the financial aspect but also their ability to adapt to technological changes and dynamic markets.

METHODS

This study uses a quantitative approach with an explanatory design. Explanatory research aims to explain the relationship between two or more symptoms or variables and explain the causes of an event (Sari et al., 2022). This study will explain the causal relationship between the independent variables (digital transformation and business incubation) and the dependent variable (SME business performance). The population in this study were all SMEs in Indonesia that have implemented digital technology in their operational activities and have participated in a business incubation program. The sampling technique used was purposive sampling, which is a sampling method with certain considerations (Sugiyono, 2018). The criteria used to select the sample were: SMEs that have implemented digital technology for at least two years; SMEs that have participated in a business incubation program for at least one year; and SMEs that are willing to participate in this study. The techniques used were Validity Test, Reliability Test, Normality Test, Multicollinearity Test, Heteroscedasticity Test, Multiple Linear Regression Analysis, F Test and t Test. In this study, several techniques were used to analyze the quality and validity of the data. The validity test aims to assess the extent to which each item in the questionnaire is able to measure the intended variable, by correlating each statement to the total score of the variable. Data processing was carried out using SPSS software. Furthermore, the reliability test was used to measure the consistency of the research instrument. Reliability indicates the extent to which a measuring instrument is free from bias and can provide stable results over time (Sekaran, 2016). The normality test was conducted to determine whether the data in the regression model was normally distributed. The ideal regression model is one that has a normal or near-normal data distribution, which can be tested through graphical analysis and statistical tests (Ghozali, 2017). The multicollinearity test aims to identify the presence of correlation between independent variables. The model is declared free of multicollinearity if the tolerance value is > 0.1 and the VIF value is < 10 (Ghozali, 2017). Meanwhile, the heteroscedasticity test is used to ask whether there is inequality in residual variance between observations in the model (Ghozali, 2017). The main analysis was conducted using multiple linear regression, namely regression with one dependent variable and two or more independent variables (Sugiyono, 2018). The regression model is written as:

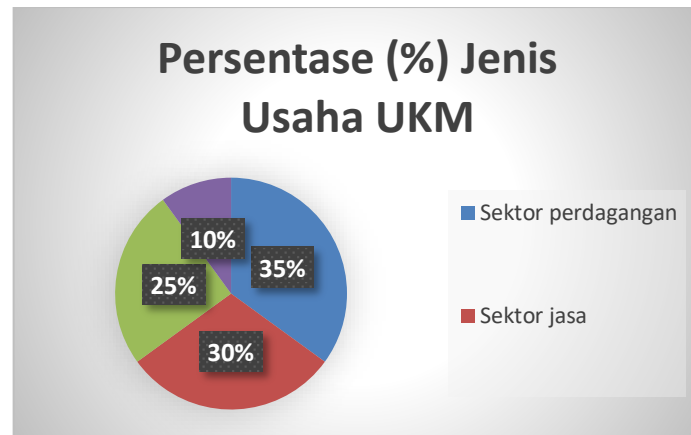
$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon,$$

where Y is the performance of SME business, α is a constant, β_1 and β_2 are the regression coefficients of each independent variable (digital transformation and business incubation), and ε is the error term. Finally, hypothesis testing is carried out through the F test to test the significance of the overall model and the t test to test the significance of the influence of each variable. The null hypothesis (H_0) is rejected if the p value < 0.05 .

RESULTS

Statistical Description of Respondents

This study involved 200 SMEs that met the inclusion criteria, namely SMEs that have implemented digital technology for at least two years and have participated in a business incubation program for at least one year. Of the 200 questionnaires distributed, all were returned and filled out, so the response rate was 100%. Below is a description of SMEs from the research sample.



Picture.1 Percentage of Types of SMEs Businesses Sampled
Source: (Data Analysis, 2024)

Based on the diagram, the trade sector is the most SME business activity in Indonesia, which is 35% of other types of SME businesses. While the lowest type of business is the agricultural and creative sectors, which is 10% of other types of businesses. Then if measured by the number of employees is as follows: Most SMEs are small businesses with between 10 and 50 employees (70%). The rest are micro businesses with less than 10 employees (20%) and medium businesses with more than 50 employees (10%).

The SMEs used as samples are spread across various provinces in Indonesia, with the highest concentration in West Java (25%), DKI Jakarta (20%), East Java (15%), and other provinces (40%).

2. Validity and Reliability Test

Before further analysis was carried out, validity and reliability tests were carried out on the research instruments.

Table. Validity and Reliability Test

Variabel	Validitas	Validitas	Cronbach's Alpha	Reliabilitas
Transformasi Digital	> 0,34	Valid	0,89	Reliabel
Inkubasi Bisnis	> 0,39	Valid	0,87	Reliabel
Kinerja Bisnis UKM	> 0,34	Valid	0,91	Reliabel

Based on the results of the validity and reliability tests, all research instruments were proven to meet the established criteria. The validity test was carried out using the Pearson Product Moment correlation, where each statement item for the three variables showed a correlation value above 0.3. The digital transformation variable has a validity value above 0.34, the business incubation variable above 0.39, and the SME business performance variable above 0.34. Thus, all items are declared valid because they are able to measure the intended theoretical construct. In addition, a reliability test was conducted to measure the internal consistency of the instrument, which was assessed through the Cronbach's Alpha value. The results showed that the digital transformation variable obtained a value of 0.89, business incubation was 0.87, and SME business performance was 0.91. All of these values far exceed the minimum threshold of 0.70, so the instrument is categorized as very reliable. This confirms that the questionnaire instrument is not only valid, but also consistent in measuring each variable accurately. Thus, this research instrument is worthy of use in further analysis to assess the influence of digital transformation and business incubation on SME business performance.

Tabel. Classical Assumption Test

Jenis Uji	Indikator Hasil	Nilai P/Kriteria	Kesimpulan
Uji Normalitas	Kolmogorov-Smirnov (p-value)	0,200 > 0,05	Data residual terdistribusi normal
Uji Multikolinearitas	VIF Transformasi Digital	1,723 < 10	Tidak ada multikolinearitas
Uji Heteroskedastisitas	VIF Inkubasi Bisnis	1,684 < 10	Tidak ada multikolinearitas

Based on the results of the classical assumption test presented in the table, it can be concluded that the regression model has met the criteria required for further analysis. The normality test using Kolmogorov-Smirnov shows a p-value of 0.200, which is greater than 0.05, indicating that the residual data is normally distributed. The multicollinearity test shows the Variance Inflation Factor (VIF) value for the Digital Transformation variable of 1.723 and Business Incubation of 1.684, both of which are far below the tolerance limit of 10, so there is no multicollinearity. The heteroscedasticity test is carried out through scatterplot analysis between the residual value and the predicted value, which shows a random distribution pattern, indicating no heteroscedasticity problems. In addition, the autocorrelation test uses the Durbin-Watson value of 1.98 which is within the normal range (1.5–2.5), indicating no autocorrelation. Thus, all classical assumptions have been met, and the regression model can be considered valid and suitable for use in hypothesis testing.

Tabel. Multiple Linear Regression Analysis

Variabel	Koefisien Regresi (β)	t-Hitung	Sig. (p-value)
Konstanta (α)	1,24	–	–
Transformasi Digital (X_1)	0,45	5,87	0,000
Inkubasi Bisnis (X_2)	0,38	4,96	0,000

The regression model used to test the influence of digital transformation and business incubation on SME business performance is as follows:

$$Y = 1,24 + 0,45X_1 + 0,38X_2 \quad Y = 1,24 + 0,45X_1 + 0,38X_2$$

Description:

- ✓ YYY is SMEs business performance,
- ✓ X1X_1X1 is digital transformation,
- ✓ X2X_2X2 is business incubation.

Tabel. F Test Results

Sumber Variasi	JK (Sum of Squares)	df	RJK (Mean Square)	F-Hitung	Sig. (p-value)
Regresi	152.34	2	76.17	45.67	< 0.001
Residual	628.76	377	1.67	0.00	0.00
Total	781.10	379	0.00	0.00	0.00

The F-count value is 45.67 with a p value <0.001. This shows that the overall regression model is significant and both independent variables jointly affect the performance of SME businesses.

Tabel. t Test Results

Variabel Independen	Koefisien Regresi (β)	t-Hitung	Sig. (p-value)	Kesimpulan
Transformasi Digital (X1)	0.45	5.12	< 0.001	Signifikan

Inkubasi Bisnis (X2)	0.38	4.76	< 0.001	Signifikan
----------------------	------	------	---------	------------

The results of the regression analysis show that digital transformation (X1) has a positive and significant effect on SME business performance, with a regression coefficient of $\beta_1 = 0.45$, t value = 5.12, and p-value <0.001. This means that the higher the implementation of digital transformation, the better the performance of SME businesses. This shows the importance of adopting digital technology in increasing the efficiency and competitiveness of small and medium enterprises. Meanwhile, the business incubation variable (X2) also has a positive and significant effect on SME business performance, with a regression coefficient of $\beta_2 = 0.38$, t value = 4.76, and p-value <0.001. This proves that incubation programs such as training, mentoring, and access to business networks contribute significantly to improving business performance. Both variables are statistically proven to strengthen the competitiveness and sustainability of SME businesses in facing the challenges of the digital economy.

DISCUSSION

Based on the results of the study, it shows that digital transformation has a positive and significant impact on SME business performance. SMEs that adopt digital technology, such as the use of e-commerce, digital-based management systems, and social media, experience significant improvements in operational efficiency, market expansion, and product innovation. This shows that SMEs that adopt digital technology can achieve better business performance compared to SMEs that have not implemented digital transformation. This finding is consistent with previous studies showing that digital transformation can increase the competitiveness of SMEs by expanding market access and increasing interaction with customers (D. T. Matt & Rauch, 2020; Vial & Baudoin, 2019). In the Indonesian context, where SMEs often face limited access to markets and resources, digital transformation offers an effective solution to overcome these challenges.

Business incubation has also been shown to have a positive and significant impact on SME business performance. Business incubation programs that include training, mentoring, and access to business networks help SMEs develop innovation capacity, marketing strategies, and financial management which in turn have a positive impact on their business performance. Participation in a business incubation program provides the necessary support for SMEs to adapt to market and technological changes, and improve their ability to face increasingly fierce competition. These results are in line with research by Bergek and Norrman (2008), which states that business incubation can reduce business failure rates by providing the right support at the early stages of business development (Bergek & Norrman, 2008). Another interesting finding from this study is the strong synergy between digital transformation and business incubation in improving SME performance. SMEs that combine digital transformation with participation in a business incubation program show better performance compared to SMEs that only focus on one aspect. This synergy can be explained by the dynamic capability theory (Teece et al., 1997) which states that companies that can integrate internal capabilities (in this case digital transformation) with external resources (business incubation) will have a stronger competitive advantage. In practice, business incubation can help SMEs optimize the use of digital technology by providing the right direction and support so that digital transformation can be carried out more effectively and efficiently.

The findings of this study have several important managerial implications:

- The Importance of Digital Transformation:** SMEs must continue to drive digital transformation as part of their business strategy to improve efficiency, innovation, and competitiveness. The government and related institutions also need to provide support, such as training and access to technology, to encourage digital adoption among SMEs.
- The Important Role of Business Incubation:** Business incubation programs need to be expanded and improved to provide more comprehensive support to SMEs, especially in facing the challenges of the digital era. Effective business incubation can help SMEs not only survive but also grow in a competitive market.
- Collaboration for Synergy:** To achieve optimal results, SMEs need to combine digital transformation with active participation in business incubation programs. Collaboration between

various parties, including the government, business incubation providers, and the private sector, is essential to create an ecosystem that supports the development of technology-based SMEs.

CONCLUSION

Based on the results of research that has been conducted regarding the impact of digital transformation and business incubation on SME business performance, several important points can be concluded as follows:

- ✓ There is a positive and significant influence between digital transformation on SME business performance.
- ✓ Participation in business incubation programs also shows a positive and significant influence on SME business performance.
- ✓ Another important finding is the strong synergy between digital transformation and business incubation, SMEs that combine these two factors simultaneously show superior business performance and can increase the competitiveness and sustainability of SMEs in a dynamic business environment.
- ✓ Research also shows that to maximize the positive impact of digital transformation and business incubation, ongoing support is needed from various parties, including the government, incubation providers, and the private sector. Strong collaboration between various stakeholders can create a conducive ecosystem for the development of technology-based SMEs.

REFERENCES

- Alawi, M., Rashid, N., Al-Shami, S. A., & Al-Lamy, H. A. (2018). The determinants of E-commerce quality on small business performance in Iraq case study from ceramic industry. *Journal of Advanced Research in Dynamical and Control Systems*, 10(2 Special Issue).
- Ausat, A. M. A., Astuti, E. S., & Wilopo. (2022). Analysis Of Factors That Influence On E-Commerce Adoption And Their Impacts For Sme Performance In Subang District. *Jurnal Teknologi Informasi Dan Ilmu Komputer (JTIK)*, 9(2).
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1). <https://doi.org/10.1177/014920639101700108>
- Bergek, A., & Norrman, C. (2008). Incubator best practice: A framework. *Technovation*, 28(1–2). <https://doi.org/10.1016/j.technovation.2007.07.008>
- Chibelushi, C., & Costello, P. (2009). Challenges facing W. Midlands ICT-oriented SMEs. *Journal of Small Business and Enterprise Development*, 16(2). <https://doi.org/10.1108/14626000910956029>
- Chiu, W., & Cho, H. (2019). E-commerce brand: The effect of perceived brand leadership on consumers' satisfaction and repurchase intention on e-commerce websites. *Asia Pacific Journal of Marketing and Logistics*, 33(6). <https://doi.org/10.1108/APJML-10-2018-0403>
- Esses, D., Csete, M. S., & Németh, B. (2021). Sustainability and digital transformation in the visegrad group of central european countries. *Sustainability (Switzerland)*, 13(11). <https://doi.org/10.3390/su13115833>
- Ghozali, I. (2017). *Aplikasi analisis multivariate dengan program IBM SPSS 23.[Multivariate analysis application with the IBM SPSS 23 program]*. Semarang: Badan Penerbit Universitas Diponegoro(2016).[in Bahasa Indonesia]. R/PPM/2017 dated May 22nd.
- Hackett, S. M., & Dilts, D. M. (2004). A Systematic Review of Business Incubation Research. *The Journal of Technology Transfer*, 29(1). <https://doi.org/10.1023/b:jott.0000011181.11952.0f>
- Hamdi, K., Yadewani, D., & Wijaya, R. (2021). Media Sosial Instagram Dalam Mendukung Promosi Usaha Sebagai Sebuah Pilihan Atau Paksaan. *Jurnal Pustaka Mitra (Pusat Akses Kajian Mengabdikan Terhadap Masyarakat)*, 1(2).
- Hess, T., Benlian, A., Matt, C., & Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive*, 15(2). <https://doi.org/10.4324/9780429286797-7>
- Johnson, H., Roberts, O., & Wilson, G. (2024). *Exploring the Economic Resilience of Small and Medium Enterprises (SMEs) During Financial Crises*.

- Kowerdziej, R., Parka, J., Krupka, J., Olifierczuk, M., Nowinowski-Kruszelnicki, E., Jaroszewicz, L., & Chojnowska, O. (2013). Dielectric properties of highly anisotropic nematic liquid crystals for tunable microwave components. *Applied Physics Letters*, 103(17). <https://doi.org/10.1063/1.4826504>
- Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2019). Digital entrepreneurship: A research agenda on new business models for the twenty-first century. In *International Journal of Entrepreneurial Behaviour and Research* (Vol. 25, Issue 2). <https://doi.org/10.1108/IJEBr-06-2018-0425>
- Liu, D. Y., Chen, S. W., & Chou, T. C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision*, 49(10). <https://doi.org/10.1108/00251741111183852>
- Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering*, 57, 339–343.
- Matt, D. T., & Rauch, E. (2020). SME 4.0: The role of small-and medium-sized enterprises in the digital transformation. In *Industry 4.0 for SMEs: Challenges, Opportunities and Requirements*. https://doi.org/10.1007/978-3-030-25425-4_1
- Mrugalska, B., & Ahmed, J. (2021). Organizational agility in industry 4.0: A systematic literature review. *Sustainability (Switzerland)*, 13(15). <https://doi.org/10.3390/su13158272>
- Mulyadi, M. (2013). PENELITIAN KUANTITATIF DAN KUALITATIF SERTA PEMIKIRAN DASAR MENGGABUNGKANNYA. *Jurnal Studi Komunikasi Dan Media*, 15(1). <https://doi.org/10.31445/jskm.2011.150106>
- Napitu, U., Corry, Sinurat, A., Harianja, T., Ease Arent, Mardiani, Nasution, A. M., & Napitu, H. (2023). SOSIALISASI PERAN PERGURUAN TINGGI DAN AKADEMISI SEBAGAI INKUBATOR BISNIS DALAM PENGUATAN KOPERASI SEBAGAI LEMBAGA EKONOMI KERAKYATAN MENUJU KOPERASI MODERN BAGI PELAKU UKM DI SUMATERA UTARA. *Jurnal Pengabdian Masyarakat Sapangambe Manoktok Hitei*, 2(1). <https://doi.org/10.36985/jpmsm.v2i1.503>
- Nazaruddin, I., Utami, E. R., & Rahmawati, E. (2024). Digitalization Challenges for SMEs: A Systematic Literature Review Perspective and Future Research. *JBTI: Jurnal Bisnis: Teori Dan Implementasi*, 15(1), 15–43.
- Opland, L. E., Pappas, I. O., Engesmo, J., & Jaccheri, L. (2022). Employee-driven digital innovation: A systematic review and a research agenda. *Journal of Business Research*, 143. <https://doi.org/10.1016/j.jbusres.2022.01.038>
- Phan, P. H., Siegel, D. S., & Wright, M. (2005). Science parks and incubators: Observations, synthesis and future research. *Journal of Business Venturing*, 20(2). <https://doi.org/10.1016/j.jbusvent.2003.12.001>
- Plekhanov, D., Franke, H., & Netland, T. H. (2023). Digital transformation: A review and research agenda. *European Management Journal*, 41(6). <https://doi.org/10.1016/j.emj.2022.09.007>
- Prasanna, R. P. I. R., Jayasundara, J. M. S. B., Gamage, S. K. N., Ekanayake, E. M. S., Rajapakshe, P. S. K., & Abeyrathne, G. A. K. N. J. (2019). Sustainability of SMEs in the competition: A systemic review on technological challenges and SME performance. In *Journal of Open Innovation: Technology, Market, and Complexity* (Vol. 5, Issue 4). <https://doi.org/10.3390/joitmc5040100>
- Priyatno, D. (2011). *Buku saku analisis statistik data SPSS*. Media Pressindo.
- Putri, P. L., & Widadi, B. (2024). Analisis Strategi Bisnis Dalam Upaya Meningkatkan Profitabilitas UMKM Aspikmas Kabupaten Banyumas. *Jurnal Ecodemica: Jurnal Ekonomi Manajemen Dan Bisnis*, 8(2), 74–81.
- Rodrigues, R. I., Lopes, P., & Varela, M. (2021). Factors affecting impulse buying behavior of consumers. *Frontiers in Psychology*, 12, 697080.
- Sari, M., Rachman, H., Juli Astuti, N., Win Afgani, M., & Abdullah Siroj, R. (2022). Explanatory Survey dalam Metode Penelitian Deskriptif Kuantitatif. *Jurnal Pendidikan Sains Dan Komputer*, 3(01). <https://doi.org/10.47709/jpsk.v3i01.1953>
- Sekaran, U. (2016). *Research methods for business: A skill building approach*. John Wiley & Sons.
- Soni, G., Kumar, S., Mahto, R. V., Mangla, S. K., Mittal, M. L., & Lim, W. M. (2022). A decision-making framework for Industry 4.0 technology implementation: The case of FinTech and

- sustainable supply chain finance for SMEs. *Technological Forecasting and Social Change*, 180. <https://doi.org/10.1016/j.techfore.2022.121686>
- Stephens, S., & Miller, K. (2022). Business incubation as a community of practice: an emergent cultural web. *Entrepreneurship and Regional Development*, 34(9–10). <https://doi.org/10.1080/08985626.2022.2112761>
- Sugiyono, P. D. (2018). Quantitative, qualitative, and combination research methods (Mixed methods). *Bandung: Alfabeta CV*.
- Surya, B., Menne, F., Sabhan, H., Suriani, S., Abubakar, H., & Idris, M. (2021). Economic growth, increasing productivity of smes, and open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1). <https://doi.org/10.3390/joitmc7010020>
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7). [https://doi.org/10.1002/\(SICI\)1097-0266\(199708\)18:7<509::AID-SMJ882>3.0.CO;2-Z](https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z)
- Vial, S., & Baudoin, P. (2019). Being and the screen: How the digital changes perception: Published in one volume with A Short Treatise on Design. In *Design thinking, design theory*.
- Westerman, G., & Bonnet, D. (2014). Turning Technology into Business. *Harvard Business Review Press*, 256.
- White, H. C. (2008). Identity and Control: How Social Formations Emerge. In *Practice*.
- Widagdo, S., Ratnasari, E., & Mandala, S. (2019). INTERNAL FACTOR ANALYSIS IN MANAGEMENT CONTROL SYSTEM DESIGN WITH ORGANIZATIONAL OBJECTIVES AS INTERVENING VARIABLES IN BLOOD TRANSFUSION UNITPMI JEMBER. *Sinergi: Jurnal Ilmiah Ilmu Manajemen*, 9(2).
- Yan, L., & Musika, C. (2018). *The social media and SMEs business growth: How can SMEs incorporate social media*.
- Yusuf, M., 'Ardhuha, J., & Hikmawati, H. (2022). Pengembangan Perangkat Pembelajaran Model Problem Based Learning untuk Meningkatkan Pemahaman Konsep Fisika dan Kemampuan Berpikir Kritis Peserta Didik. *Jurnal Ilmiah Profesi Pendidikan*, 7(2). <https://doi.org/10.29303/jipp.v7i2.457>
- Zhou, H., & Zondo, R. W. D. (2023). THE ROLE OF BUSINESS INCUBATION PROGRAMMES ON THE PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN SOUTH AFRICA. *The Seybold Report*, 18(5).

**5. Bukti Konfirmasi Review
dan Hasil Review Kedua
(11 Mei 2025)**

ID #3441

Manuscript Evaluation Summary

Section	Assessment (1–5)	Evaluation	Comments / Suggestions
Title	4	Adequate	The title reflects the core topic, but it could be made more concise for impact. Suggest: “The Role of Digital Transformation and Business Incubation on SME Performance in Indonesia.”
Abstract	3	Needs Improvement	The abstract covers the topic but lacks structured format. Consider dividing into Background, Purpose, Method, Findings, Conclusion , and limit to 200 words. Clarify the core novelty and contribution of the study.
Keywords	3	Needs Improvement	Keywords are general. Include more specific terms like: “Digital Ecosystem,” “Business Support Services,” “Technology Adoption,” “Entrepreneurial Growth.”
Introduction	3	Needs Improvement	While the context is clear, the research gap is not explicitly stated . Clarify what previous studies have missed and what this study contributes. End with a clear objective statement.
Literature Review & Hypotheses	3	Needs Improvement	Subheadings are unclear. Clearly label each sub-section with the variables (e.g., “ <i>Digital Transformation and Business Performance</i> ”). Explicitly describe relationships and develop hypotheses logically.
Methodology	3	Needs Improvement	Justify the population and sampling technique more rigorously . Explain why the location (Indonesia) was chosen, and detail the variable measurements (scales, constructs, etc.).

Results	3	Needs Improvement	Figure 2 should be replaced with a table. Tables 1–5 contain Indonesian text ; translate all into English. Improve clarity and ensure proper labeling. Include explanation of key findings before moving to discussion.
Discussion	3	Underdeveloped	Needs deeper theoretical grounding. Discuss how the findings align or contrast with existing digital economy and SME development theories. Justify arguments with recent and international references .
Conclusion	4	Adequate	Effectively summarizes results, but would benefit from clearer theoretical and practical implications . Emphasize how findings can inform policy and SME support initiatives.
Citation and References	2	Needs Major Revision	Some citations are unstructured or inconsistent (e.g., “D. T. Matt & Rauch, 2020”). Use a uniform citation style (APA or Chicago, based on journal preference). Update with recent (last 5 years) peer-reviewed sources.
Language & Style	3	Needs Improvement	Language is mostly clear but needs professional proofreading . Several grammatical errors, Indonesian terms , and awkward phrasings remain. Recommend editing for academic tone and fluency.
Overall Evaluation	3	Needs Improvement	Strengthen the literature framework, refine hypothesis structure, standardize citations , and improve language. Better justification of method and enriched discussion will elevate it.



Alif RinggaPersada <alifringga@upi.edu>

[JIMKES] Editor Decision

1 message

Annisa <assistant1459@gmail.com>
To: Alif Ringga Persada <alifringga@upi.edu>

Sun, May 11, 2025 at 7:49 PM

Alif Ringga Persada, Hari Mulyadi, A. Jajang Warya Mahri, Chairul Furqon:

We have reached a decision regarding your submission to Jurnal Ilmiah Manajemen Kesatuan, "The Impact of Digital Transformation and Business Incubation on Small and Medium Enterprises (SMEs) Business Performance".

Our decision is: Revisions Required

[Jurnal Ilmiah Manajemen Kesatuan](#)

2 attachments

 **A-Review Results-3441-A.docx**
18K

 **B-3441-Review-.docx**
19K

**6. Bukti Artikel Revisi
Hasil Turnitin dan
Form Hasil Perbaikan
(23 Juni 2025)**

The Role of Digital Transformation and Business Incubation on SME Performance in Indonesia

ABSTRACT

In this rapidly evolving digital era, digital transformation and business incubation have been identified as key determinants in driving improved performance SMEs in Indonesia. A quantitative study, using an explanatory approach, specifically investigated how these two aspects affect 200 SMEs in Indonesia that have actively adopted digital technology and participated in incubation programs. The information for the study was collected through an extensive survey and analyzed in depth utilizing various techniques of multiple linear regression. The results indicate that digital transformation has a meaningful and beneficial effect on the performance of SMEs. This impact is mainly manifested through the utilization of strategies such as the use of e-commerce, the implementation of an efficient digital management system, and the optimization of social media, which collectively contribute to increased operational efficiency and expanded market reach. Furthermore, incubation programs have also been shown to play a crucial role in improving performance, by providing relevant training, expert mentoring, and vital access to business networks. Overall, this study confirms that the synergy between digital transformation and business incubation substantially improves SME performance.

Keywords: *Business Incubation, Digital Transformation, SMEs Business performance.*

ABSTRAK

Di era digital yang terus berkembang pesat ini, transformasi digital dan inkubasi bisnis telah diidentifikasi sebagai penentu utama dalam mendorong peningkatan kinerja Usaha Kecil dan Menengah (UKM) di Indonesia. Sebuah studi kuantitatif, dengan menggunakan pendekatan eksplanatif, secara khusus menyelidiki bagaimana kedua aspek ini memengaruhi 200 UKM di Indonesia yang telah secara aktif mengadopsi teknologi digital dan berpartisipasi dalam program inkubasi. Data penelitian dikumpulkan melalui kuesioner yang komprehensif dan dianalisis secara mendalam menggunakan metode regresi linier berganda. Hasil penelitian menunjukkan bahwa transformasi digital memiliki dampak yang signifikan dan positif terhadap kinerja bisnis UKM. Dampak ini terutama diwujudkan melalui pemanfaatan strategi seperti penggunaan e-commerce, penerapan sistem manajemen digital yang efisien, dan optimalisasi media sosial, yang secara kolektif berkontribusi pada peningkatan efisiensi operasional dan perluasan jangkauan pasar. Lebih jauh, program inkubasi juga telah terbukti memainkan peran penting dalam meningkatkan kinerja, dengan memberikan pelatihan yang relevan, pendampingan ahli, dan akses penting ke jaringan bisnis. Secara keseluruhan, studi ini menegaskan bahwa sinergi antara transformasi digital dan inkubasi bisnis secara substansial meningkatkan kinerja UKM.

Kata Kunci: *Inkubasi Bisnis, Kinerja Bisnis UKM, Transformasi Digital.*

INTRODUCTION

Digital transformation has become a global phenomenon that is significantly reshaping the business landscape. No longer a discretionary effort, digital transformation has evolved into a vital strategic imperative for all types of enterprises, including Small and Medium Enterprises (SMEs), particularly in an age marked by rapid advancements in information and communication technologies. Its influence extends beyond business performance and plays a key role in advancing the Sustainable Development Goals (SDGs). Technologies like artificial intelligence, cloud computing, and the Internet of Things play a crucial role in facilitating the realization of the SDGs, highlighting the strategic importance of digital transformation (Plekhanov et al., 2023; Ridhovan & Anggarani, 2024). In addition to optimizing business efficiency, digital transformation contributes to social equity, environmental protection, and economic development, thus reinforcing its integral role in sustainable progress (Esses et al., 2021). The SDGs, established in 2015 by 193 member states of the United Nations, represent a universal blueprint to achieve sustainability by 2030. They encompass 17 goals and 169 specific targets, each aimed at fostering

inclusive and equitable global development (Wijaya et al., 2024). In this context, digital transformation emerges not only as a business enabler but also as a fundamental driver in achieving long-term developmental and sustainability outcomes.

Digital transformation can help SMEs to improve their performance, which can ultimately contribute to achieving SDGs, namely SDG 1 (Eradicating Poverty) and SDG 8 (Decent Work and Economic Growth). Then, even though Industry 4.0 technology has the potential to improve business performance, numerous studies highlight the difficulties faced by small and medium-sized enterprises (SMEs) may face during the adoption of this technology (Soni et al., 2022; Nazaruddin et al., 2024). SMEs often face constraints related to resource availability, market access, and technological capabilities, adoption of digital transformation can serve as an important mechanism for survival and achieving sustainable growth in an increasingly competitive business environment.

At this time, SMEs to increase their competitiveness in today's business, SMEs must effectively utilize Information technology and enhance and apply their skills and abilities (Prasanna et al., 2019; Rodrigues et al., 2021; Yusuf et al., 2022; Nazaruddin et al., 2024). Furthermore, it is very important to improve corporate strategy by using information technology and optimizing work processes (Mrugalska & Ahmed, 2021) which involves utilizing computer systems and improving business performance in addressing market demands (Chiu & Cho, 2019; Mrugalska & Ahmed, 2021; Surya et al., 2021). The importance of information technology in business is widely recognized (Kowerdziej et al., 2013). Digitalization is a multifaceted phenomenon that encompasses various dimensions, including digital entrepreneurship, digital strategy, digital processes, and digital education (Kraus et al., 2019).

Apart from digital transformation, business incubation plays an essential part in the development and progress of small and medium-sized businesses (SMEs). Business incubation facilitates entry to critical resources that these firms may not have otherwise, including financial support, managerial expertise, professional networks, and opportunities for training and development. As a result, business incubation builds a stronger foundation for SMEs to start, operate, and expand their businesses more effectively. Technology and organization positively influence e-commerce adoption and SME performance (Ausat et al., 2022). Incubated firms outperform non-incubated firms due to tailored business support services. Incubated firms benefit from more employees, not incubated from the owner's experience (Zhou & Zondo, 2023). Business incubators support the growth and development of SMEs in developing countries (Napitu et al., 2023).

While the advantages of digital transformation and business incubation have been thoroughly explored individually in existing literature, a significant research gap remains in assessing their combined impact on MSME performance, particularly in developing nations like Indonesia. Previous research has not investigated extensively the interplay between these two elements in fostering long-term competitive advantage or determining the success factors of their integration. By empirically examining the simultaneous effects of business incubation and digital transformation on MSME performance, this study seeks to address this problem, while also pinpointing effective strategies to enhance MSME competitiveness in the digital age. This study's primary contribution is to present a fresh conceptual framework and pertinent empirical data that bolster technology-driven MSME development policies and strategies in Indonesia.

LITERATURE REVIEW

Digital Transformation and Business Performance

Digital transformation emerges from the convergence of personal and organizational IT technologies, characterized by the influence of advanced technologies like cloud computing, social media, mobile platforms, analytics, and the Internet of Things known as SMACIT technologies (White, 2008). This transformation entails the incorporation of digital technologies into fundamental business activities within the framework of the digital economy (Liu et al., 2011), as well as the use of innovation to optimize organizational functions and expand global reach (Westerman & Bonnet, 2014). According to Hess et al. (2016), digital transformation affects organizations at three levels: the business life cycle and customer experience, internal aspects such as strategic goals and organizational structure, and the emergence of new business models. Vial &

Baudoin (2019) emphasize that digital transformation changes the way organizations work, think, and provide services. It involves the adoption of instruments like online retail, social platforms, large data sets, and cloud technology to improve performance, drive innovation, and maintain competitiveness (C. Matt et al., 2015).

The implementation of digital technology by SMEs is influenced by several factors according to Rogers' (2003) diffusion of innovation theory, such as relative advantage, fit with business processes, complexity, trial, and observable results. From the Resource-Based View (RBV) perspective, digital technology is a strategic resource that can create competitive advantage if managed properly (Barney, 1991; Widagdo et al., 2019). Utilization of the internet is now a basic need for SMEs to grow. The use of social media allows SMEs to reach customers more widely and manage relationships effectively (Yan & Musika, 2018), while e-commerce strengthens relationships with clients (Alawi et al., 2018). Platforms such as Instagram are also effective for product promotion (Hamdi et al., 2021). However, the digital transformation process is not free from challenges, such as budget constraints, lack of digital literacy, and resistance to change (Chibelushi & Costello, 2009).

H1: Digital transformation has a positive impact on MSME business performance.

Business Incubation and Business Performance

Business incubation is a program designed to support the growth and development of SMEs by providing various resources, such as funding, mentoring, training, and access to a broad business network. The definition of business incubation presented in the document "Definition of Business Incubation" emphasizes that business incubators not only provide structural support to SMEs but also act as catalysts in accelerating business growth through various interventions focused on the specific needs of small businesses (Stephens & Miller, 2022).

In the digital era, the function of business incubation is becoming increasingly important because digital transformation requires skills and knowledge that may not be possessed by all entrepreneurs. Business incubation can help bridge this gap by providing access to the latest technologies and assisting SMEs in the process of digitizing their businesses. Business incubators also provide the training needed to master digital tools and implement them in business operations, which can ultimately improve the efficiency and performance of SMEs as a whole (Opland et al., 2022).

Business incubation helps start-ups and small businesses in their early stages. Business incubation provides the support they need to grow and succeed over time (Hackett & Diltz, 2004). Business incubation is all about helping new ventures. Business incubation offers mentorship in management, teaches entrepreneurial skills, connects people to networks, and helps them find the funding they need (Phan et al., 2005). In the small business world, incubation serves as a lifeline. Incubation lightens the burden of scarce resources and reduces the chances of failure. With mentorship and support, incubation creates a path forward.

H2: Business incubation has a positive effect on MSME business performance.

Digital Performance, Business Incubation to Business Performance

SMEs business performance covers various aspects, such as achieving financial targets, customer satisfaction, operational efficiency, and continuous innovation. This definition is presented in the document "Definition of SME Business Performance," which emphasizes that business performance is not only measured from the financial aspect but also from how SMEs are able to maintain customer satisfaction and continue to innovate to stay relevant in the market (Mulyadi, 2013).

In the digital era, SMEs business performance is increasingly determined by their ability to adopt and utilize digital technology. SMEs that successfully integrate digital technology into their operations tend to be more efficient and able to offer products or services that are more in line with market needs. In addition, continuous innovation using technology is also an important factor in

maintaining gaining a competitive edge and enhancing long-term company success (Johnson et al., 2024).

SME business performance in the digital era is highly dependent on their ability to utilize digital technology as a tool to improve operational efficiency, meet customer needs, and continue to innovate. Thus, measuring SME business performance must include not only the financial aspect but also their ability to adapt to technological changes and dynamic markets.

H3: The concurrent implementation of digital transformation and business incubation positively influences the performance of MSMEs.

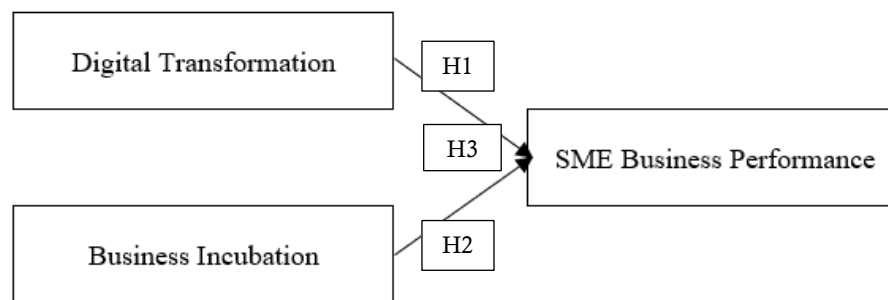


Figure 1. Research framework

The figure shows a conceptual model of the relationship between two independent variables and one dependent variable, namely Digital Transformation, Business Incubation, and MSME Business Performance. From Figure 1 above, it shows that Digital Transformation and Business Incubation act as factors that influence MSME business performance, namely Digital Transformation exerts a favorable influence on MSME Business Performance, and Business Incubation positively impacts MSME Business Performance.

METHODS

This research employs an explanatory design and a quantitative methodology. Explanatory research aims to elucidate the relationship between multiple symptoms or variables and explain the causes of an event (Sari et al., 2022). This study will explain the causal relationship between the independent variables (digital transformation and business incubation) and the dependent variable (SME business performance). The population in this study is all MSMEs in Indonesia that have adopted digital technology in their operational activities and participated in formal business incubation programs. The selection of Indonesia as a research location is based on the strategic role of MSMEs in the national economy, where MSMEs cover more than 99% of business units and contribute more than 60% to gross domestic product (GDP). However, most MSMEs in Indonesia still face challenges such as limited access to technology, capital, and professional support in business development. Therefore, the Indonesian context provides strong empirical relevance to evaluate the effectiveness of digital transformation and business incubation as strategies to increase MSME competitiveness (Sugiyono, 2018). MSMEs that had been using digital technology for at least two years, had taken part in a business incubation program for at least a year, and were willing to participate were included in the study's sample selection criteria. Validity, reliability, normality, multicollinearity, heteroscedasticity, multiple linear regression analysis, F test, and t test were used to test the data. While reliability evaluates the consistency of the measuring tool, validity evaluates how well the questionnaire items represent the intended variables (Sekaran, 2016). The regression model assumptions were checked using tests for heteroscedasticity, multicollinearity, and normality (Ghozali, 2017). The main analysis was conducted using multiple linear regression, namely regression with one dependent variable and two or more independent variables (Sugiyono, 2018). The regression model is written as:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \epsilon,$$

where Y is the performance of SME business, α is a constant, β_1 and β_2 are the regression coefficients of each independent variable (digital transformation and business incubation), and ϵ

is the error term. Finally, hypothesis testing is carried out through the F test to test the significance of the overall model and the t test to test the significance of the influence of each variable. The null hypothesis (H_0) is rejected if the p value < 0.05 .

RESULTS

This study involved 200 SMEs that met the inclusion criteria, namely SMEs that have implemented digital technology for at least two years and have participated in a business incubation program for at least one year. Of the 200 questionnaires distributed, all were returned and filled out, so the response rate was 100%. Below is a description of SMEs from the research sample.

Table 1. Percentage of Types of SMEs Businesses Sampled

Jenis Usaha UKM	Presentase
Trade Sector	35%
Service Sector	30%
Production Sector	25%
Agriculture Sector	10%

The table 1 above shows a pie chart depicting the percentage of types of Small and Medium Enterprises (SMEs) based on business sectors. There are four main sectors shown. The trade sector is the sector with the largest percentage, which is 35%, indicating that most SMEs are engaged in the buying and selling of goods. Followed by the service sector which covers 30% of the total SME businesses, reflecting the important role of services in the SME economy. Furthermore, the production sector contributes 25%, which includes manufacturing, handicrafts, and processing businesses. Finally, the agricultural sector only represents 10%, becoming the sector with the smallest contribution among the four. This data provides an overview of the structure of SME businesses in a region, where the trade and service sectors dominate economic activity. This information is useful for formulating policies and developing more targeted SME development programs based on the proportion of existing business sectors. The rest are micro businesses with less than 10 employees (20%) and medium businesses with more than 50 employees (10%). The SMEs used as samples are spread across various provinces in Indonesia, with the highest concentration in West Java (25%), DKI Jakarta (20%), East Java (15%), and other provinces (40%).

Table 2. Validity and Reliability Test

Variabel	Validitas	Validitas	Cronbach's Alpha	Reliabilitas
Transformasi Digital	> 0.34	Valid	0.89	Reliabel
Inkubasi Bisnis	> 0.39	Valid	0.87	Reliabel
Kinerja Bisnis UKM	> 0.34	Valid	0.91	Reliabel

Considering the outcomes of the reliability and validity tests, all research instruments were proven to meet the established criteria. The validity test was carried out using the Pearson Product Moment correlation, where each statement item for the three variables showed a correlation value above 0.3. The digital transformation variable has a validity value above 0.34, The process of business incubation variable above 0.39, and the SME business performance variable above 0.34. Thus, all items are declared valid because they are able to measure the intended theoretical construct. In addition, a reliability test was conducted to measure the internal consistency of the instrument, which was assessed through the Cronbach's Alpha value. The results showed that the digital transformation variable obtained a value of 0.89, business incubation was 0.87, and SME business performance was 0.91. All of these values far exceed the minimum threshold of 0.70, so the instrument is categorized as very reliable. This confirms that the questionnaire instrument is not only valid, but also consistent in measuring each variable accurately. Thus, this research instrument is worthy of use in further analysis to assess the impact of business incubation and digital transformation on the success of SMEs.

Tabel 3. Clascal Assumption Test

Jenis Uji	Indikator Hasil	Nilai P/Kriteria	Kesimpulan
Uji Normalitas	Kolmogorov-Smirnov (p-value)	0.200 > 0.05	Data residual terdistribusi normal
Uji Multikolinearitas	VIF Transformasi Digital	1.723 < 10	Tidak ada multikolinearitas
Uji Heteroskedastisitas	VIF Inkubasi Bisnis	1.684 < 10	Tidak ada multikolinearitas

According to the outcomes of the classical assumption test shown in the table, it can be inferred that the regression model has satisfied the necessary criteria for additional analysis. The normality test using Kolmogorov-Smirnov shows a p-value of 0.200, which is greater than 0.05, indicating that the residual data is normally distributed. The multicollinearity test shows the Variance Inflation Factor (VIF) value for the Digital Transformation variable of 1.723 and Business Incubation of 1.684, both of which are far below the tolerance limit of 10, so there is no multicollinearity. The heteroscedasticity test is carried out through scatterplot analysis between the residual value and the predicted value, which shows a random distribution pattern, indicating no heteroscedasticity problems. In addition, the autocorrelation test uses the Durbin-Watson value of 1.98 which is within the normal range (1.5–2.5), indicating no autocorrelation. Thus, all classical assumptions have been met, and the regression model can be considered valid and suitable for use in hypothesis testing.

Tabel 4. Multiple Linear Regression Analysis

Variabel	Koefisien Regresi (β)	t-Hitung	Sig. (p-value)
Konstanta (α)	1.24	–	–
Transformasi Digital (X_1)	0.45	5.87	0.000
Inkubasi Bisnis (X_2)	0.38	4.96	0.000

Based on the results of the multiple linear regression analysis in the table above, it can be concluded that the two independent variables, namely Digital Transformation (X_1) and Business Incubation (X_2), have a significant effect on SME Business Performance. First, the constant value (α) of 1.24 indicates that if Digital Transformation and Business Incubation are zero, then the baseline value of SME business performance is 1.24. Then, the regression coefficient value of Digital Transformation ($\beta = 0.45$) with a t-count of 5.87 and a significance (p-value) = 0.000, which is less than 0.05, indicates that Digital Transformation has a positive and significant effect on SME Business Performance. This means that the higher the implementation of digital transformation, the better the performance of SME businesses. Likewise with Business Incubation, which has a regression coefficient of 0.38, a t-count of 4.96, and a p-value = 0.000, indicating that Business Incubation also has a positive and significant effect on SME business performance. Overall, this model shows that both Digital Transformation and Business Incubation make significant contributions to improving SME performance.

Tabel 5. F Test Results

Sumber Variasi	JK (Sum of Squares)	df	RJK (Mean Square)	F-Hitung	Sig. (p-value)
Regresi	152.34	2	76.17	45.67	< 0.001
Residual	628.76	377	1.67	0.00	0.00
Total	781.10	379	0.00	0.00	0.00

Based on the results of the F test in Table 4, it shows that the regression model used in this study is statistically significant. The F-count value of 45.67 is much greater than the F-table (with df of 2; 377), and the significance value (p-value) < 0.001, which means it is smaller than 0.05. This shows that the regression model is simultaneously significant. This means that together the variables Digital Transformation and Business Incubation have a significant effect on SME Business Performance. The JK Regression value of 152.34 shows the variation in SME Business Performance that can be explained by the two independent variables. While the JK Residual of 628.76 is the remaining variation that cannot be explained by the model. Thus, this F test provides strong evidence that the regression model involving Digital Transformation and Business Incubation is able to significantly explain the variation in SME Business Performance.

Tabel 6. T Test Results

Variabel Independen	Koefisien Regresi (β)	t-Hitung	Sig. (p-value)	Kesimpulan
Transformasi Digital (X1)	0.45	5.12	< 0.001	Signifikan
Inkubasi Bisnis (X2)	0.38	4.76	< 0.001	Signifikan

The results of the regression analysis show that digital transformation (X1) has a positive and significant effect on SME business performance, with a regression coefficient of $\beta_1 = 0.45$, t value = 5.12, and p-value <0.001. This means that the higher the implementation of digital transformation, the better the performance of SME businesses. This shows the importance of adopting digital technology in increasing the efficiency and competitiveness of small and medium enterprises. Meanwhile, the business incubation variable (X2) also has a positive and significant effect on SME business performance, with a regression coefficient of $\beta_2 = 0.38$, t value = 4.76, and p-value <0.001. This proves that incubation programs such as training, mentoring, and access to business networks contribute significantly to improving business performance. Both variables are statistically proven to strengthen the competitiveness and sustainability of SME businesses in facing the challenges of the digital economy.

DISCUSSION

Based on the results of the study, it shows that digital transformation has a positive and significant impact on SME business performance. SMEs that adopt digital technology, such as the use of e-commerce, digital-based management systems, and social media, experience significant improvements in operational efficiency, market expansion, and product innovation. This shows that SMEs that adopt digital technology can achieve better business performance compared to SMEs that have not implemented digital transformation. This finding is consistent with previous studies showing that digital transformation can increase the competitiveness of SMEs by expanding market access and increasing interaction with customers (Matt & Rauch, 2020; Vial & Baudoin, 2019). In the Indonesian context, where SMEs often face limited access to markets and resources, digital transformation offers an effective solution to overcome these challenges.

Business incubation has also been shown to have a positive and significant impact on SME business performance. Business incubation programs that include training, mentoring, and access to business networks help SMEs develop innovation capacity, marketing strategies, and financial management which in turn have a positive impact on their business performance. Participation in a business incubation program provides the necessary support for SMEs to adapt to market and technological changes and improve their ability to face increasingly fierce competition. These results are in line with research by Bergek and Norrman (2008), which states that business incubation can reduce business failure rates by providing the right support at the early stages of business development (Bergek & Norrman, 2008). Another interesting finding from this study is the strong synergy between digital transformation and business incubation in improving SME performance. SMEs that combine digital transformation with participation in a business incubation program show better performance compared to SMEs that only focus on one aspect. This synergy can be explained by the dynamic capability theory (Teece et al., 1997) which states that companies that can integrate internal capabilities (in this case digital transformation) with external resources (business incubation) will have a stronger competitive advantage. In practice, business incubation can help SMEs optimize the use of digital technology by providing the right direction and support so that digital transformation can be carried out more effectively and efficiently.

The findings of this study highlight several important managerial implications. First, digital transformation is essential for SMEs and should be integrated into their core business strategies to enhance efficiency, foster innovation, and maintain competitiveness. To support this, the government and related institutions need to play an active role by offering training, access to digital tools, and other resources that facilitate technology adoption. Second, business incubation plays a critical role in helping SMEs navigate the challenges of the digital era. Therefore, incubation programs must be expanded and improved to provide more comprehensive and tailored support. These programs can significantly contribute to the growth and sustainability of SMEs in increasingly competitive markets. Lastly, collaboration is key to maximizing the benefits of both digital transformation and business incubation. A synergistic approach involving SMEs,

government bodies, incubation service providers, and the private sector is necessary to build a strong ecosystem that fosters the development of innovative, technology-based SMEs.

CONCLUSION

The research concludes that both digital transformation and participation in business incubation programs significantly enhance SME performance. These strategies contribute to operational efficiency, innovation, and competitiveness, indicating their crucial role in supporting the sustainable growth of small and medium enterprises. An important finding from this study is the strong synergy between digital transformation and business incubation. SMEs that integrate both tend to show superior performance compared to SMEs that only implement one strategy. This shows that combining internal capabilities through the adoption of digital technology and external support through business incubation can strengthen the competitiveness and sustainability of SMEs amidst rapidly changing market dynamics. From a policy perspective, these findings have strategic implications. First, the government and policy-making institutions need to make digital transformation a top agenda in SME development, not only by providing access to technology, but also through digital skills training and coaching in strategic use of technology. Second, incubation programs need to be expanded in scope and adjusted to the challenges of the digital era, by providing relevant curriculum, experienced mentors, and extensive business networks. Third, a collaborative approach between stakeholders is needed to build an innovative and highly competitive SME ecosystem. The government, private sector, incubation service providers, educational institutions, and financial institutions must play an active role and be interconnected in supporting SMEs, especially those based on technology. This collaboration is important to ensure that SMEs have equal access to resources, ongoing coaching, and new market opportunities. Overall, the results of this study provide a strong empirical basis for evidence-based policy making in encouraging digital transformation and strengthening business incubation as the main strategy for SME development. With targeted policies and coordinated cross-sector support, SMEs are expected to be able to become the main pillar of digital economic growth at the national and global levels.

REFERENCES

- [1] Alawi, M., Rashid, N., Al-Shami, S. A., & Al-Lamy, H. A. (2018). The determinants of E-commerce quality on small business performance in Iraq case study from ceramic industry. *Journal of Advanced Research in Dynamical and Control Systems*, 10(2 Special Issue), 70-74.
- [2] Ausat, A. M. A., Astuti, E. S., & Wilopo. (2022). Analysis Of Factors That Influence On E-Commerce Adoption and Their Impacts for SME Performance in Subang District. *Jurnal Teknologi Informasi Dan Ilmu Komputer (JTIK)*, 9(2), 30-45.
- [3] Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 121-131.
- [4] Bergek, A., & Norrman, C. (2008). Incubator best practice: A framework. *Technovation*, 28(1-2).
- [5] Chibelushi, C., & Costello, P. (2009). Challenges facing W. Midlands ICT-oriented SMEs. *Journal of Small Business and Enterprise Development*, 16(2), 202-220.
- [6] Chiu, W., & Cho, H. (2019). E-commerce brand: The effect of perceived brand leadership on consumers' satisfaction and repurchase intention on e-commerce websites. *Asia Pacific Journal of Marketing and Logistics*, 33(6), 333-343.
- [7] Esses, D., Csete, M. S., & Németh, B. (2021). Sustainability and digital transformation in the visegrad group of central european countries. *Sustainability (Switzerland)*, 13(11), 151-162.
- [8] Ghozali, I. (2017). Aplikasi analisis multivariate dengan program IBM SPSS 23. [Multivariate analysis application with the IBM SPSS 23 program]. Semarang: Badan Penerbit Universitas Diponegoro (2016). [in Bahasa Indonesia]. R/PPM/2017 dated May 22nd.
- [9] Hackett, S. M., & Dilts, D. M. (2004). A Systematic Review of Business Incubation Research. *The Journal of Technology Transfer*, 29(1), 152-163.
- [10] Hamdi, K., Yadewani, D., & Wijaya, R. (2021). Media Sosial Instagram Dalam Mendukung Promosi Usaha Sebagai Sebuah Pilihan Atau Paksaan. *Jurnal Pustaka Mitra (Pusat Akses Kajian Mengabdikan Terhadap Masyarakat)*, 1(2), 41-56.
- [11] Hess, T., Benlian, A., Matt, C., & Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive*, 15(2), 345-355.
- [12] Johnson, H., Roberts, O., & Wilson, G. (2024). Exploring the Economic Resilience of Small and Medium Enterprises (SMEs) During Financial Crises.

- [13] Kowerdziej, R., Parka, J., Krupka, J., Olifierczuk, M., Nowinowski-Kruszelnicki, E., Jaroszewicz, L., & Chojnowska, O. (2013). Dielectric properties of highly anisotropic nematic liquid crystals for tunable microwave components. *Applied Physics Letters*, 103(17), 151-177.
- [14] Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2019). Digital entrepreneurship: A research agenda on new business models for the twenty-first century. In *International Journal of Entrepreneurial Behaviour and Research* (Vol. 25, Issue 2), 3333-3339
- [15] Liu, D. Y., Chen, S. W., & Chou, T. C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision*, 49(10), 171-181.
- [16] Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering*, 57, 339-343.
- [17] Matt, D. T., & Rauch, E. (2020). SME 4.0: The role of small-and medium-sized enterprises in the digital transformation. In *Industry 4.0 for SMEs: Challenges, Opportunities and Requirements*.
- [18] Mrugalska, B., & Ahmed, J. (2021). Organizational agility in industry 4.0: A systematic literature review. *Sustainability (Switzerland)*, 13(15), 12-25.
- [19] Mulyadi, M. (2013). PENELITIAN KUANTITATIF DAN KUALITATIF SERTA PEMIKIRAN DASAR MENGGABUNGKANNYA. *Jurnal Studi Komunikasi Dan Media*, 15(1), 334-355
- [20] Napitu, U., Corry, Sinurat, A., Harianja, T., Ease Arent, Mardiani, Nasution, A. M., & Napitu, H. (2023). Sosialisasi Peran Perguruan Tinggi Dan Akademisi Sebagai Inkubator Bisnis Dalam Penguatan Koperasi Sebagai Lembaga Ekonomi Kerakyatan Menuju Koperasi Modern Bagi Pelaku Ukm Di Sumatera Utara. *Jurnal Pengabdian Masyarakat Sapangambe Manoktok Hitei*, 2(1), 132-143.
- [21] Nazaruddin, I., Utami, E. R., & Rahmawati, E. (2024). Digitalization Challenges for SMEs: A Systematic Literature Review Perspective and Future Research. *JBTL: Jurnal Bisnis: Teori Dan Implementasi*, 15(1), 15-43.
- [22] Opland, L. E., Pappas, I. O., Engesmo, J., & Jaccheri, L. (2022). Employee-driven digital innovation: A systematic review and a research agenda. *Journal of Business Research*, 143-145.
- [23] Phan, P. H., Siegel, D. S., & Wright, M. (2005). Science parks and incubators: Observations, synthesis and future research. *Journal of Business Venturing*, 20(2), 514-524.
- [24] Plekhanov, D., Franke, H., & Netland, T. H. (2023). Digital transformation: A review and research agenda. *European Management Journal*, 41(6), 414-424.
- [25] Prasanna, R. P. I. R., Jayasundara, J. M. S. B., Gamage, S. K. N., Ekanayake, E. M. S., Rajapakshe, P. S. K., & Abeyrathne, G. A. K. N. J. (2019). Sustainability of SMEs in the competition: A systemic review on technological challenges and SME performance. In *Journal of Open Innovation: Technology, Market, and Complexity* (Vol. 5, Issue 4), 514-525.
- [26] Ridhovan, A. R., & Anggarani, A. (2024). Innovative Strategies of Change Management in the Indonesian Banking Industry in an Election Year. *Jurnal Ilmiah Manajemen Kesatuan*, 12(5), 1899-1906.
- [27] Rodrigues, R. I., Lopes, P., & Varela, M. (2021). Factors affecting impulse buying behavior of consumers. *Frontiers in Psychology*, 12(4), 697080.
- [28] Sari, M., Rachman, H., Juli Astuti, N., Win Afgani, M., & Abdullah Siroj, R. (2022). Explanatory Survey dalam Metode Penelitian Deskriptif Kuantitatif. *Jurnal Pendidikan Sains Dan Komputer*, 3(01) 87-99.
- [29] Sekaran, U. (2016). Research methods for business: A skill building approach. John Wiley & Sons.
- [30] Soni, G., Kumar, S., Mahto, R. V., Mangla, S. K., Mittal, M. L., & Lim, W. M. (2022). A decision-making framework for Industry 4.0 technology implementation: The case of FinTech and sustainable supply chain finance for SMEs. *Technological Forecasting and Social Change*, 4(2), 180.
- [31] Stephens, S., & Miller, K. (2022). Business incubation as a community of practice: an emergent cultural web. *Entrepreneurship and Regional Development*, 34(9-10).
- [32] Sugiyono, P. D. (2018). Quantitative, qualitative, and combination research methods (Mixed methods). Bandung: Alfabeta CV.
- [33] Surya, B., Menne, F., Sabhan, H., Suriani, S., Abubakar, H., & Idris, M. (2021). Economic growth, increasing productivity of smes, and open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 151-165.
- [34] Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 121-134.
- [35] Vial, S., & Baudoin, P. (2019). Being and the screen: How the digital changes perception: Published in one volume with A Short Treatise on Design. In *Design thinking, design theory*.
- [36] Westerman, G., & Bonnet, D. (2014). Turning Technology into Business. Harvard Business Review Press, 256.
- [37] White, H. C. (2008). Identity and Control: How Social Formations Emerge. In *Practice*.
- [38] Widagdo, S., Ratnasari, E., & Mandala, S. (2019). Internal Factor Analysis In Management Control System Design with Organizational Objectives as Intervening Variables in Blood Transfusion Unitpmi Jember. *Sinergi: Jurnal Ilmiah Ilmu Manajemen*, 9(2), 189-201.
- [39] Yan, L., & Musika, C. (2018). The social media and SMEs business growth: How can SMEs incorporate social media.
- [40] Yusuf, M., 'Ardhuha, J., & Hikmawati, H. (2022). Pengembangan Perangkat Pembelajaran Model Problem Based Learning untuk Meningkatkan Pemahaman Konsep Fisika dan Kemampuan Berpikir Kritis Peserta Didik. *Jurnal Ilmiah Profesi Pendidikan*, 7(2), 177-188.
- [41] Zhou, H., & Zondo, R. W. D. (2023). The Role of Business Incubation Programmes on The Performance of Small And Medium Enterprises In South Africa. *The Seybold Report*, 18(5), 444-458.

3441_Jimkes.docx

by 1 1

Submission date: 23 Jun-2025 04:41AM (UTC-0400)

Submission ID: 2695327376

File name: 3441_Jimkes.docx (101.95K)

Word count: 5579

Character count: 33550

The Role of Digital Transformation and Business Incubation on SME Performance in Indonesia

ABSTRACT

In this rapidly evolving digital era, digital transformation and business incubation have been identified as key determinants in driving improved performance SMEs in Indonesia. A quantitative study, using an explanatory approach, specifically investigated how these two aspects affect 200 SMEs in Indonesia that have actively adopted digital technology and participated in incubation programs. The information for the study was collected through an extensive survey and analyzed in depth utilizing various techniques of multiple linear regression. The results indicate that digital transformation has a meaningful beneficial effect on the performance of SMEs. This impact is mainly manifested through the utilization of strategies such as the use of e-commerce, the implementation of an efficient digital management system, and the optimization of social media, which collectively contribute to increased operational efficiency and expanded market reach. Furthermore, incubation programs have also been shown to play a crucial role in improving performance, by providing relevant training, expert mentoring, and vital access to business networks. Overall, this study confirms that the synergy between digital transformation and business incubation substantially improves SME performance.

Keywords: Business Incubation, Digital Transformation, SMEs Business performance.

ABSTRAK

Di era digital yang terus berkembang pesat ini, transformasi digital dan inkubasi bisnis telah diidentifikasi sebagai penentu utama dalam mendorong peningkatan kinerja Usaha Kecil dan Menengah (UKM) di Indonesia. Sebuah studi kuantitatif, dengan menggunakan pendekatan eksplanatif, secara khusus menyelidiki bagaimana kedua aspek ini memengaruhi 200 UKM di Indonesia yang telah secara aktif mengadopsi teknologi digital dan berpartisipasi dalam program inkubasi. Data penelitian dikumpulkan melalui kuesioner yang komprehensif dan dianalisis secara mendalam menggunakan metode regresi linier berganda. Hasil penelitian menunjukkan bahwa transformasi digital memiliki dampak yang signifikan dan positif terhadap kinerja bisnis UKM. Dampak ini terutama diwujudkan melalui pemanfaatan strategi seperti penggunaan e-commerce, penerapan sistem manajemen digital yang efisien, dan optimalisasi media sosial, yang secara kolektif berkontribusi pada peningkatan efisiensi operasional dan perluasan jangkauan pasar. Lebih jauh, program inkubasi juga telah terbukti memainkan peran penting dalam meningkatkan kinerja, dengan memberikan pelatihan yang relevan, pendampingan ahli, dan akses penting ke jaringan bisnis. Secara keseluruhan, studi ini menegaskan bahwa sinergi antara transformasi digital dan inkubasi bisnis secara substansial meningkatkan kinerja UKM.

Kata Kunci: Inkubasi Bisnis, Kinerja Bisnis UKM, Transformasi Digital.

INTRODUCTION

Digital transformation has become a global phenomenon that is significantly reshaping the business landscape. No longer a discretionary effort, digital transformation has evolved into a vital strategic imperative for all types of enterprises, including Small and Medium Enterprises (SMEs), particularly in an age marked by rapid advancements in information and communication technologies. Its influence extends beyond business performance and plays a key role in advancing the Sustainable Development Goals (SDGs). Technologies like artificial intelligence, cloud computing, and the Internet of Things play a crucial role in facilitating the realization of the SDGs, highlighting the strategic importance of digital transformation (Plekhanov et al., 2023; Ridhovan & Anggarani, 2024). In addition to optimizing business efficiency, digital transformation contributes to social equity, environmental protection, and economic development, thus reinforcing its integral role in sustainable progress (Esses et al., 2021). The SDGs, established in 2015 by 193 member states of the United Nations, represent a universal blueprint to achieve sustainability by 2030. They encompass 17 goals and 169 specific targets, each aimed at fostering

58
inclusive and equitable global development (Wijaya et al., 2024). In this context, digital transformation emerges not only as a business enabler but also as a fundamental driver in achieving long-term developmental and sustainability outcomes.

Digital transformation can help SMEs to improve their performance, which can ultimately contribute to achieving SDGs, namely SDG 7 (Eradicating Poverty) and SDG 8 (Decent Work and Economic Growth). Then, even though Industry 4.0 technology has the potential to improve business performance, numerous studies highlight the difficulties faced by small and medium-sized enterprises (SMEs) may face during the adoption of this technology (Soni et al., 2022; Nazaruddin et al., 2024). SMEs often face constraints related to resource availability, market access, and technological capabilities, adoption of digital transformation can serve as an important mechanism for survival and achieving sustainable growth in an increasingly competitive business environment.

At this time, SMEs to increase their competitiveness in today's business, SMEs must effectively utilize Information technology and enhance and apply their skills and abilities (Prasanna et al., 2019; Rodrigues et al., 2021; Yusuf et al., 2022; Nazaruddin et al., 2024). Furthermore, it is very important to improve corporate strategy by using information technology and optimizing work processes (Mrugalska & Ahmed, 2021) which involves utilizing computer systems and improving business performance in addressing market demands (Chiu & Cho, 2019; Mrugalska & Ahmed, 2021; Surya et al., 2021). The importance of information technology in business is widely recognized (Kowderziej et al., 2013). Digitalization is a multifaceted phenomenon that encompasses various dimensions, including digital entrepreneurship, digital strategy, digital processes, and digital education (Kraus et al., 2019). 32

Apart from digital transformation, business incubation plays an essential part in the development and progress of small and medium-sized businesses (SMEs). Business incubation facilitates entry to critical resources that these firms may not have otherwise, including financial support, managerial expertise, professional networks, and opportunities for training and development. As a result, business incubation builds a stronger foundation for SMEs to start, operate, and expand their businesses more effectively. Technology and organization positively influence e-commerce adoption and SME performance (Ausat et al., 2022). Incubated firms outperform non-incubated firms due to tailored business support services. Incubated firms benefit from more employees, not incubated from the owner's experience (Zhou & Zondo, 2023). Business incubators support the growth and development of SMEs in developing countries (Napitu et al., 2023).

While the advantages of digital transformation and business incubation have been thoroughly explored individually in existing literature, a significant research gap remains in assessing their combined impact on MSME performance, particularly in developing nations like Indonesia. Previous research has not investigated extensively the interplay between these two elements in fostering long-term competitive advantage or determining the success factors of their integration. By empirically examining the simultaneous effects of business incubation and digital transformation on MSME performance, this study seeks to address this problem, while also pinpointing effective strategies to enhance MSME competitiveness in the digital age. This study's primary contribution is to present a fresh conceptual framework and pertinent empirical data that bolster technology-driven MSME development policies and strategies in Indonesia.

63 LITERATURE REVIEW

Digital Transformation and Business Performance

Digital transformation emerges from the convergence of personal and organization IT technologies, characterized by the influence of advanced technologies like cloud computing, social media, mobile platforms, analytics, and the Internet of Things known as SMACIT technologies (White, 2008). This transformation entails the incorporation of digital technologies into fundamental business activities within the framework of the digital economy (Liu et al., 2011), as well as the use of innovation to optimize organizational functions and expand global reach (Westerman & Bonnet, 2014). According to Hess et al. (2016), digital transformation affects organizations at three levels: the business life cycle and customer experience, internal aspects such as strategic goals and organizational structure, and the emergence of new business models. Vial &

Baudoin (2019) emphasize that digital transformation changes the way organizations work, think, and provide services. It involves the adoption of instruments like online retail, social platforms, large data sets, and cloud technology to improve performance, drive innovation, and maintain competitiveness (C. Matt et al., 2015).

The implementation of digital technology by SMEs is influenced by several factors according to Rogers' (2003) diffusion of innovation theory, such as relative advantage, fit with business processes, complexity, trial, and observable results. From the Resource-Based View (RBV) perspective, digital technology is a strategic resource that can create competitive advantage if managed properly (Barney, 1991; Widagdo et al., 2019). Utilization of the internet is now a basic need for SMEs to grow. The use of social media allows SMEs to reach customers more widely and manage relationships effectively (Yan & Musika, 2018), while e-commerce strengthens relationships with clients (Asiwi et al., 2018). Platforms such as Instagram are also effective for product promotion (Hamdi et al., 2021). However, the digital transformation process is not free from challenges, such as budget constraints, lack of digital literacy, and resistance to change (Chibelushi & Costello, 2009).

²⁹
H1: Digital transformation has a positive impact on MSME business performance.

Business Incubation and Business Performance

Business incubation is a program designed to support the growth and development of SMEs by providing various resources, such as funding, mentoring, training, and access to a broad business network. The definition of business incubation presented in the document "Definition of Business Incubation" emphasizes that business incubators not only provide structural support to SMEs but also act as catalysts in accelerating business growth through various interventions focused on the specific needs of small businesses (Stephens & Miller, 2022).

In the digital era, the function of business incubation is becoming increasingly important because digital transformation requires skills and knowledge that may not be possessed by all entrepreneurs. Business incubation can help bridge this gap by providing access to the latest technologies and assisting SMEs in the process of digitizing their businesses. Business incubators also provide the training needed to master digital tools and implement them in business operations, which can ultimately improve the efficiency and performance of SMEs as a whole (Opland et al., 2022).

Business incubation helps start-ups and small businesses in their early stages. Business incubation provides the support they need to grow and succeed over time (Hackett & Dilts, 2004). Business incubation is all about helping new ventures. Business incubation offers mentorship in management, teaches entrepreneurial skills, connects people to networks, and helps them find the funding they need (Phan et al., 2005). In the small business world, incubation serves as a lifeline. Incubation lightens the burden of scarce resources and reduces the chances of failure. With mentorship and support, incubation creates a path forward.

H2: Business incubation has a positive effect on MSME business performance.

Digital Performance, Business Incubation to Business Performance

SMEs business performance covers various aspects, such as achieving financial targets, customer satisfaction, operational efficiency, and continuous innovation. This definition is presented in the document "Definition of SME Business Performance," which emphasizes that business performance is not only measured from the financial aspect but also from how SMEs are able to maintain customer satisfaction and continue to innovate to stay relevant in the market (Mulyadi, 2013).

In the digital era, SMEs business performance is increasingly determined by their ability to adopt and utilize digital technology. SMEs that successfully integrate digital technology into their operations tend to be more efficient and able to offer products or services that are more in line with market needs. In addition, continuous innovation using technology is also an important factor in

maintaining gaining a competitive edge and enhancing long-term company success (Johnson et al., 2024).

SME business performance in the digital era is highly dependent on their ability to utilize digital technology as a tool to improve operational efficiency, meet customer needs, and continue to innovate. Thus, ensuring SME business performance must include not only the financial aspect but also their ability to adapt to technological changes and dynamic markets.

H3: The concurrent implementation of digital transformation and business incubation positively influences the performance of MSMEs.

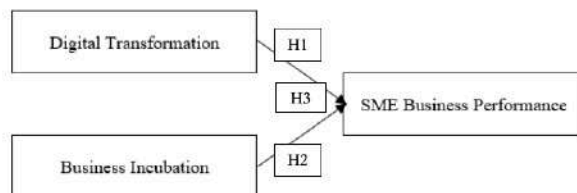


Figure 1. Research framework

The figure shows a conceptual model of the relationship between two independent variables and one dependent variable, namely Digital Transformation, Business Incubation, and MSME Business Performance. From Figure 1 above, it shows that Digital Transformation and Business Incubation act as factors that influence MSME business performance, namely Digital Transformation exerts a favorable influence on MSME Business Performance, and Business Incubation positively impacts MSME Business Performance.

METHODS

This research employs an explanatory design and a quantitative methodology. Explanatory research aims to elucidate the relationship between multiple symptoms or variables and explain the causes of an event (Sari et al., 2022). This study will explain the causal relationship between the independent variables (digital transformation and business incubation) and the dependent variable (SME business performance). The population in this study is all MSMEs in Indonesia that have adopted digital technology in their operational activities and participated in formal business incubation programs. The selection of Indonesia as a research location is based on the strategic role of MSMEs in the national economy, where MSMEs cover more than 99% of business units and contribute more than 60% to gross domestic product (GDP). However, most MSMEs in Indonesia still face challenges such as limited access to technology, capital, and professional support in business development. Therefore, the Indonesian context provides strong empirical relevance to evaluate the effectiveness of digital transformation and business incubation as strategies to increase MSME competitiveness (Sugiyono, 2018). MSMEs that had been using digital technology for at least two years, had taken part in a business incubation program for at least a year, and were willing to participate were included in the study's sample selection criteria. Validity, reliability, normality, multicollinearity, heteroscedasticity, multiple linear regression analysis, F test, and t test were used to test the data. While reliability evaluates the consistency of the measuring tool, validity evaluates how well the questionnaire items represent the intended variables (Sekaran, 2016). The regression model assumptions were checked using tests for heteroscedasticity, multicollinearity, and normality (Ghozali, 2017). The main analysis was conducted using multiple linear regression, namely regression with one dependent variable and two or more independent variables (Sugiyono, 2018). The regression model is written as:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \epsilon$$

where Y is the performance of SME business, α is a constant, β_1 and β_2 are the regression coefficients of each independent variable (digital transformation and business incubation), and ϵ

is the error term. Finally, hypothesis testing is carried out through the F test to test the significance of the overall model and the t test to test the significance of the influence of each variable. The null hypothesis (H_0) is rejected if the p value <0.05.

RESULTS

This study involved 200 SMEs that met the inclusion criteria, namely SMEs that have implemented digital technology for at least two years and have participated in a business incubation program for at least one year. Of the 200 questionnaires distributed, all were returned and filled out, so the response rate was 100%. Below is a description of SMEs from the research sample.

Table 1. Percentage of Types of SMEs Businesses Sampled

Jenis Usaha UKM	Presentase
Trade Sector	35%
Service Sector	30%
Production Sector	25%
Agriculture Sector	10%

The table 1 above shows a pie chart depicting the percentage of types of Small and Medium Enterprises (SMEs) based on business sectors. There are four main sectors shown. The trade sector is the sector with the largest percentage, which is 35%, indicating that most SMEs are engaged in the buying and selling of goods. Followed by the service sector which covers 30% of the total SME businesses, reflecting the important role of services in the SME economy. Furthermore, the production sector contributes 25%, which includes manufacturing, handicrafts, and processing businesses. Finally, the agricultural sector only represents 10%, becoming the sector with the smallest contribution among the four. This data provides an overview of the structure of SME businesses in a region, where the trade and service sectors dominate economic activity. This information is useful for formulating policies and developing more targeted SME development programs based on the proportion of existing business sectors. The rest are micro businesses with less than 10 employees (20%) and medium businesses with more than 50 employees (10%). The SMEs used as samples are spread across various provinces in Indonesia, with the highest concentration in West Java (25%), DKI Jakarta (20%), East Java (15%), and other provinces (40%).

Table 2. Validity and Reliability Test

Variabel	Validitas	Validitas	Cronbach's Alpha	Reliabilitas
Transformasi Digital	> 0.34	Valid	0.89	Reliabel
Inkubasi Bisnis	> 0.39	Valid	0.87	Reliabel
Kinerja Bisnis UKM	> 0.34	Valid	0.91	Reliabel

Considering the outcomes of the reliability and validity tests, all research instruments were proven to meet the established criteria. The validity test was carried out using the Pearson Product Moment correlation, where each statement item for the three variables showed a correlation value above 0.3. The digital transformation variable has a validity value above 0.34, The process of business incubation variable above 0.39, and the SME business performance variable above 0.34. Thus, all items are declared valid because they are able to measure the intended theoretical construct. In addition, a reliability test was conducted to measure the internal consistency of the instrument, which was assessed through the Cronbach's Alpha value. The results showed that the digital transformation variable obtained a value of 0.89, business incubation was 0.87, and SME business performance was 0.91. All of these values far exceed the minimum threshold of 0.70, so the instrument is categorized as very reliable. This confirms that the questionnaire instrument is not only valid, but also consistent in measuring each variable accurately. Thus, this research instrument is worthy of use in further analysis to assess the impact of business incubation and digital transformation on the success of SMEs.

Tabel 3. Classical Assumption Test

Jenis Uji	Indikator Hasil	Nilai P / Kriteria	Kesimpulan
Uji Normalitas	Kolmogorov-Smirnov (p-value)	0.200 > 0.05	Data residual terdistribusi normal
Uji Multikolinearitas	VIF Transformasi Digital	1.723 < 10	Tidak ada multikolinearitas
Uji Heteroskedastisitas	VIF Inkubasi Bisnis	1.684 < 10	Tidak ada multikolinearitas

According to the outcomes of the classical assumption test shown in the table, it can be inferred that the regression model has satisfied the necessary criteria for additional analysis. The normality test using Kolmogorov-Smirnov shows a p-value of 0.200, which is greater than 0.05, indicating that the residual data is normally distributed. The multicollinearity test shows the Variance Inflation Factor (VIF) value for the Digital Transformation variable of 1.723 at Business Incubation of 1.684, both of which are far below the tolerance limit of 10, so there is no multicollinearity. The heteroscedasticity test is carried out through scatterplot analysis between the residual value and the predicted value, which shows a random distribution pattern, indicating no heteroscedasticity problems. In addition, the autocorrelation test uses the Durbin-Watson value of 1.98 which is within the normal range (1.5–2.5), indicating no autocorrelation. Thus, all classical assumptions have been met, and the regression model can be considered valid and suitable for use in hypothesis testing.

Tabel 4. Multiple Linear Regression Analysis

Variabel	Koefisien Regresi (β)	t-Hitung	Sig. (p-value)
Konstanta (α)	1.24	–	–
Transformasi Digital (X_1)	0.45	5.87	0.000
Inkubasi Bisnis (X_2)	0.38	4.96	0.000

Based on the results of the multiple linear regression analysis in the table above, it can be concluded that the two independent variables, namely Digital Transformation (X_1) and Business Incubation (X_2), have a significant effect on SME Business Performance. First, the constant value (α) of 1.24 indicates that if Digital Transformation and Business Incubation are zero, then the baseline value of SME business performance is 1.24. Then, the regression coefficient value of Digital Transformation ($\beta = 0.45$) with a t-count of 5.87 and a significance (p-value) = 0.000, which is less than 0.05, indicates that Digital Transformation has a positive and significant effect on SME Business Performance. This means that the higher the implementation of digital transformation, the better the performance of SME businesses. Likewise with Business Incubation, which has a regression coefficient of 0.38, a t-count of 4.96, and a p-value = 0.000, indicating that Business Incubation also has a positive and significant effect on SME business performance. Overall, this model shows that both Digital Transformation and Business Incubation make significant contributions to improving SME performance.

Tabel 5. F Test Results

Sumber Variasi	JK (Sum of Squares)	df	RJK (Mean Square)	F-Hitung	Sig. (p-value)
Regresi	152.34	2	76.17	45.67	< 0.001
Residual	628.76	377	1.67	0.00	0.00
Total	781.10	379	0.00	0.00	0.00

Based on the results of the F test in Table 4, it shows that the regression model used in this study is statistically significant. The F-count value of 45.67 is much greater than the F-table (with df of 2; 377), and the significance value (p-value) < 0.001, which means it is smaller than 0.05. This shows that the regression model is simultaneously significant. This means that together the variables Digital Transformation and Business Incubation have a significant effect on SME Business Performance. The JK Regression value of 152.34 shows the variation in SME Business Performance that can be explained by the two independent variables. While the JK Residual of 628.76 is the remaining variation that cannot be explained by the model. Thus, this F test provides strong evidence that the regression model involving Digital Transformation and Business Incubation is able to significantly explain the variation in SME Business Performance.

Tabel 6. T Test Results

Variabel Independen	Koefisien Regresi (β)	t-Hitung	Sig. (p-value)	Kesimpulan
Transformasi Digital (X1)	0.45	5.12	< 0.001	Signifikan
Inkubasi Bisnis (X2)	0.38	4.76	< 0.001	Signifikan

The results of the regression analysis show that digital transformation (X1) has a positive and significant effect on SME business performance, with a regression coefficient of $\beta_1 = 0.45$, t value = 5.12, and p-value < 0.001. This means that the higher the implementation of digital transformation, the better the performance of SME businesses. This shows the importance of adopting digital technology in increasing the efficiency and competitiveness of small and medium enterprises. Meanwhile, the business incubation variable (X2) also has a positive and significant effect on SME business performance, with a regression coefficient of $\beta_2 = 0.38$, t value = 4.76, and p-value < 0.001. This proves that incubation programs such as training, mentoring, and access to business networks contribute significantly to improving business performance. Both variables are statistically proven to strengthen the competitiveness and sustainability of SME businesses in facing the challenges of the digital economy.

DISCUSSION

Based on the results of the study, it shows that digital transformation has a positive and significant impact on SME business performance. SMEs that adopt digital technology, such as the use of e-commerce, digital-based management systems, and social media, experience significant improvements in operational efficiency, market expansion, and product innovation. This shows that SMEs that adopt digital technology can achieve better business performance compared to SMEs that have not implemented digital transformation. This finding is consistent with previous studies showing that digital transformation can increase the competitiveness of SMEs by expanding market access and increasing interaction with customers (Matt & Rauch, 2020; Vial & Baudoin, 2019). In the Indonesian context, where SMEs often face limited access to markets and resources, digital transformation offers an effective solution to overcome these challenges.

Business incubation has also been shown to have a positive and significant impact on SME business performance. Business incubation programs that include training, mentoring, and access to business networks help SMEs develop innovation capacity, marketing strategies, and financial management which in turn have a positive impact on their business performance. Participation in a business incubation program provides the necessary support for SMEs to adapt to market and technological changes and improve their ability to face increasingly fierce competition. These results are in line with research by Bergek and Norrman (2008), which states that business incubation can reduce business failure rates by providing the right support at the early stages of business development (Bergek & Norrman, 2008). Another interesting finding from this study is the strong synergy between digital transformation and business incubation in improving SME performance. SMEs that combine digital transformation with participation in a business incubation program show better performance compared to SMEs that only focus on one aspect. This synergy can be explained by the dynamic capability theory (Teece et al., 1997) which states that companies that can integrate internal capabilities (in this case digital transformation) with external resources (business incubation) will have a stronger competitive advantage. In practice, business incubation can help SMEs optimize the use of digital technology by providing the right direction and support so that digital transformation can be carried out more effectively and efficiently.

The findings of this study highlight several important managerial implications. First, digital transformation is essential for SMEs and should be integrated into their core business strategies to enhance efficiency, foster innovation, and maintain competitiveness. To support this, the government and related institutions need to play an active role by offering training, access to digital tools, and other resources that facilitate technology adoption. Second, business incubation plays a critical role in helping SMEs navigate the challenges of the digital era. Therefore, incubation programs must be expanded and improved to provide more comprehensive and tailored support. These programs can significantly contribute to the growth and sustainability of SMEs in increasingly competitive markets. Lastly, collaboration is key to maximizing the benefits of both digital transformation and business incubation. A synergistic approach involving SMEs,

government bodies, incubation service providers, and the private sector is necessary to build a strong ecosystem that fosters the development of innovative, technology-based SMEs.

CONCLUSION

The research concludes that both digital transformation and participation in business incubation programs significantly enhance SME performance. These strategies contribute to operational efficiency, innovation, and competitiveness, indicating their crucial role in supporting the sustainable growth of small and medium enterprises. An important finding from this study is the strong synergy between digital transformation and business incubation. SMEs that integrate both tend to show superior performance compared to SMEs that only implement one strategy. This shows that combining internal capabilities through the adoption of digital technology and external support through business incubation can strengthen the competitiveness and sustainability of SMEs amidst rapidly changing market dynamics. From a policy perspective, these findings have strategic implications. First, the government and policy-making institutions need to make digital transformation a top agenda in SME development, not only by providing access to technology, but also through digital skills training and coaching in strategic use of technology. Second, incubation programs need to be expanded in scope and adjusted to the challenges of the digital era, by providing relevant curriculum, experienced mentors, and extensive business networks. Third, a collaborative approach between stakeholders is needed to build an innovative and highly competitive SME ecosystem. The government, private sector, incubation service providers, educational institutions, and financial institutions must play an active role and be interconnected in supporting SMEs, especially those based on technology. This collaboration is important to ensure that SMEs have equal access to resources, ongoing coaching, and new market opportunities. Overall, the results of this study provide a strong empirical basis for evidence-based policy making in encouraging digital transformation and strengthening business incubation as the main strategy for SME development. With targeted policies and coordinated cross-sector support, SMEs are expected to be able to become the main pillar of digital economic growth at the national and global levels.

REFERENCES

- [1] Alawi, M., Rashid, N., Al-Shami, S. A., & Al-Lamy, H. A. (2018). The determinants of E-commerce quality on small business performance in Iraq case study from ceramic industry. *Journal of Advanced Research in Dynamical and Control Systems*, 10(2 Special Issue), 70-74.
- [2] Ausat, A. M. A., Astuti, E. S., & Wilopo. (2022). Analysis Of Factors That Influence On E-Commerce Adoption and Their Impacts for SME Performance in Subang District. *Jurnal Teknologi Informat Dan Ilmu Komputer (JTIIK)*, 9(2), 30-45.
- [3] Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 121-131.
- [4] Bergek, A., & Norman, C. (2008). Incubator best practice: A framework. *Technovation*, 28(1-2).
- [5] Chibelushi, C., & Costello, P. (2009). Challenges facing W. Midlands ICT-oriented SMEs. *Journal of Small Business and Enterprise Development*, 16(2), 202-220.
- [6] Chiu, W., & Cho, H. (2019). E-commerce brand: The effect of perceived brand leadership on consumers' satisfaction and repurchase intention on e-commerce websites. *Asia Pacific Journal of Marketing and Logistics*, 33(6), 333-343.
- [7] Esses, D., Csete, M. S., & Németh, B. (2021). Sustainability and digital transformation in the visegrad group of central european countries. *Sustainability (Switzerland)*, 13(11), 151-162.
- [8] Ghozali, I. (2017). Aplikasi analisis multivariate dengan program IBM SPSS 23. [Multivariate analysis application with the IBM SPSS 23 program]. Semarang: Badan Penerbit Universitas Diponegoro (2016). [in Bahasa Indonesia] R/PPM/2017 dated May 22nd.
- [9] Hackett, S. M., & Dilts, D. M. (2004). A Systematic Review of Business Incubation Research. *The Journal of Technology Transfer*, 29(1), 152-163.
- [10] Hamdi, K., Yadevami, D., & Wijaya, R. (2021). Media Sosial Instagram Dalam Mendukung Promosi Usaha Sebagai Sebuah Pilihan Atau Paksaan. *Jurnal Pustaka Mitra (Pusat Akses Kajian Mengabdikan Terhadap Masyarakat)*, 1(2), 41-56.
- [11] Hess, T., Benlian, A., Matt, C., & Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive*, 15(2), 345-355.
- [12] Johnson, H., Roberts, O., & Wilson, G. (2024). Exploring the Economic Resilience of Small and Medium Enterprises (SMEs) During Financial Crises.

- [13] Kowerdziej, R., Parka, J., Krupka, J., Olifierczuk, M., Nowinowski-Kruszelnicki, E., Jaroszewicz, L., & Chojnowska, O. (2013). Dielectric properties of highly anisotropic nematic liquid crystals for tunable microwave components. *Applied Physics Letters*, 103(17), 151-177.
- [14] Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2019). Digital entrepreneurship: A research agenda on new business models for the twenty-first century. *In International Journal of Entrepreneurial Behaviour and Research* (Vol. 25, Issue 2), 3333-3339.
- [15] Liu, D. Y., Chen, S. W., & Chou, T. C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision*, 49(10), 171-181.
- [16] Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering*, 57, 339-343.
- [17] Matt, D. T., & Rauch, E. (2020). SME 4.0: The role of small-and medium-sized enterprises in the digital transformation. In *Industry 4.0 for SMEs: Challenges, Opportunities and Requirements*.
- [18] Mrugalska, B., & Ahmed, J. (2021). Organizational agility in industry 4.0: A systematic literature review. *Sustainability (Switzerland)*, 13(15), 12-25.
- [19] Mulyadi, M. (2013). PENELITIAN KUANTITATIF DAN KUALITATIF SERTA PEMIKIRAN DASAR MENGGABUNGKANNYA. *Jurnal Studi Komunikasi Dan Media*, 15(1), 334-355.
- [20] Napitu, U., Corry, Sinurat, A., Harianja, T., Ease Arent, Mardiani, Nasution, A. M., & Napitu, H. (2023). Sosialisasi Peran Perguruan Tinggi Dan Akademisi Sebagai Inkubator Bisnis Dalam Penguatan Koperasi Sebagai Lembaga Ekonomi Kerakyatan Menuju Koperasi Modern Bagi Pelaku Ukm Di Sumatera Utara. *Jurnal Pengabdian Masyarakat Sapangabei Manoktok Hitei*, 2(1), 132-143.
- [21] Nazaruddin, I., Utami, E. R., & Rahmawati, E. (2024). Digitalization Challenges for SMEs: A Systematic Literature Review Perspective and Future Research. *JBTJ: Jurnal Bisnis: Teori Dan Implementasi*, 15(1), 15-43.
- [22] Opland, L. E., Pappas, I. O., Engesmo, J., & Jaccheri, L. (2022). Employee-driven digital innovation: A systematic review and a research agenda. *Journal of Business Research*, 143-145.
- [23] Phan, P. H., Siegel, D. S., & Wright, M. (2005). Science parks and incubators: Observations, synthesis and future research. *Journal of Business Venturing*, 20(2), 514-524.
- [24] Plekhanov, D., Franke, H., & Netland, T. H. (2023). Digital transformation: A review and research agenda. *European Management Journal*, 41(6), 414-424.
- [25] Prasanna, R. P. I. R., Jayasundara, J. M. S. B., Gamage, S. K. N., Ekanayake, E. M. S., Rajapakshe, P. S. K., & Abeyrathne, G. A. K. N. J. (2019). Sustainability of SMEs in the competition: A systemic review on technological challenges and SME performance. *In Journal of Open Innovation: Technology, Market, and Complexity* (Vol. 5, Issue 4), 514-525.
- [26] Ridhovan, A. R., & Anggarani, A. (2024). Innovative Strategies of Change Management in the Indonesian Banking Industry in an Election Year. *Jurnal Ilmiah Manajemen Kesatuan*, 12(5), 1899-1906.
- [27] Rodrigues, R. L., Lopes, P., & Varela, M. (2021). Factors affecting impulse buying behavior of consumers. *Frontiers in Psychology*, 12(4), 697080.
- [28] Sari, M., Rachman, H., Juli Astuti, N., Win Afgani, M., & Abdullah Siroj, R. (2022). Explanatory Survey dalam Metode Penelitian Deskriptif Kuantitatif. *Jurnal Pendidikan Sains Dan Komputer*, 3(01) 87-99.
- [29] Sekaran, U. (2016). Research methods for business: A skill building approach. John Wiley & Sons.
- [30] Soni, G., Kumar, S., Mahto, R. V., Mangla, S. K., Mittal, M. L., & Lim, W. M. (2022). A decision-making framework for Industry 4.0 technology implementation: The case of FinTech and sustainable supply chain finance for SMEs. *Technological Forecasting and Social Change*, 4(2), 180.
- [31] Stephens, S., & Miller, K. (2022). Business incubation as a community of practice: an emergent cultural web. *Entrepreneurship and Regional Development*, 34(9-10).
- [32] Sugiyono, P. D. (2018). Quantitative, qualitative, and combination research methods (Mixed methods). Bandung: Alfabeta CV.
- [33] Surya, B., Menne, F., Sabhan, H., Suriani, S., Abubakar, H., & Idris, M. (2021). Economic growth, increasing productivity of smes, and open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 151-165.
- [34] Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 121-134.
- [35] Vial, S., & Baudoin, P. (2019). Being and the screen: How the digital changes perception: Published in one volume with A Short Treatise on Design. In *Design thinking, design theory*.
- [36] Westerman, G., & Bonnet, D. (2014). Turning Technology into Business. Harvard Business Review Press, 256.
- [37] White, H. C. (2008). Identity and Control: How Social Formations Emerge. In *Practice*.
- [38] Widagdo, S., Ratnasari, E., & Mandala, S. (2019). Internal Factor Analysis In Management Control System Design with Organizational Objectives as Intervening Variables in Blood Transfusion Unitpmi Jember. *Sinergi: Jurnal Ilmiah Ilmu Manajemen*, 9(2), 189-201.
- [39] Yan, L., & Musika, C. (2018). The social media and SMEs business growth: How can SMEs incorporate social media.
- [40] Yusuf, M., 'Ardhuha, J., & Hikmawati, H. (2022). Pengembangan Perangkat Pembelajaran Model Problem Based Learning untuk Meningkatkan Pemahaman Konsep Fisika dan Kemampuan Berpikir Kritis Peserta Didik. *Jurnal Ilmiah Profesi Pendidikan*, 7(2), 177-188.
- [41] Zhou, H., & Zondo, R. W. D. (2023). The Role of Business Incubation Programmes on The Performance of Small And Medium Enterprises In South Africa. *The Seybold Report*, 18(5), 444-458.

ORIGINALITY REPORT

20%

SIMILARITY INDEX

16%

INTERNET SOURCES

15%

PUBLICATIONS

3%

STUDENT PAPERS

PRIMARY SOURCES

1	ecosia.asia.ac.id Internet Source	1 %
2	www.mdpi.com Internet Source	1 %
3	thebabe.stiebankbpdjateng.ac.id Internet Source	1 %
4	Submitted to Universidade Aberta Student Paper	1 %
5	Nurwati, Husin. "The Influence of Competence and Professionalism on The Performance of Midwives in The Regional Public Hospital of Kendari City", Jurnal Manajemen Sains dan Organisasi, 2025 Publication	1 %
6	jurnal.unprimdn.ac.id Internet Source	1 %
7	Submitted to University of Lay Adventists of Kigali Student Paper	1 %
8	Hurriyati Ratih, Tjahjono Benny, GafarAbdullah Ade, Sulastri, Lisnawati. "Advances in Business, Management and Entrepreneurship", CRC Press, 2020 Publication	<1 %
9	www.grafiati.com Internet Source	<1 %

10	www.ncbi.nlm.nih.gov Internet Source	<1 %
11	ejournal.upnvj.ac.id Internet Source	<1 %
12	K. Latha, E. Sulaiman, Siby Yohannan. "Linkage of Digitalization and Perceived Organizational Performance of Small and Medium Enterprises", SDMIMD Journal of Management, 2023 Publication	<1 %
13	iraj.in Internet Source	<1 %
14	Chindy Fitri Firdayani, Sari Lestari Zainal, Jalaludin Sayuti. "LINKAGE OF THE RAYO LAKE FESTIVAL EVENT DIMENSION AND THE DECISION TO VISIT TOURISTS", Jurnal Kepariwisataa, 2024 Publication	<1 %
15	Masud Ibrahim, Coffie Emmanuel, Dora Yeboah, Aaron Kumah. "The influence of Digital Technologies on Quality Service Delivery in the Public Sector: The Mediating role of Service Expectation", Springer Science and Business Media LLC, 2025 Publication	<1 %
16	ecancer.org Internet Source	<1 %
17	www.dovepress.com Internet Source	<1 %
18	eprints.untirta.ac.id Internet Source	<1 %
19	jurnal.ibik.ac.id Internet Source	<1 %

20 Abdurrahman Bafadhal, Ahmad Sulhan, Dwi Wahyudiati. "The Influence of Islamic Education Policy On The Implementation of Multiculturalism at The Al-Asholah Foundation", Tadbir : Jurnal Studi Manajemen Pendidikan, 2024

Publication

<1 %

21 Intan Pratiwi Hernovianus, Kaniati Amalia, Amrozi Khamidi, Budi Purwoko, Mufarrihul Hazin. "The effect of reward policy on the motivation and performance of physical education teachers in elementary schools surabaya city", Citius : Jurnal Pendidikan Jasmani, Olahraga, dan Kesehatan, 2025

Publication

<1 %

22 impakter.com
Internet Source

<1 %

23 www.growingscience.com
Internet Source

<1 %

24 Bambang Juanda, Yeni Herdiyeni, Lukytawati Anggraeni, Mutiara Probokawuryan, Aisyah Nur'aeni, Dwi Setyowawan. "Unraveling the empirical impact on MSMEs: Socio-economic characteristics, nudging application, and e-commerce adoption", Journal of Infrastructure, Policy and Development, 2025

Publication

<1 %

25 Iqbal Aidar Idrus, Kasmad Kamal, Syahiruddin Syah. "Challenges and Development of Disaster Mitigation Policies in North Luwu Regency: Strengthening Post-Disaster Resilience", International Journal of Safety and Security Engineering, 2025

Publication

<1 %

26 Lukas Schnell, Elisabeth S.C. Berger. "Sharing and exchange dynamics in entrepreneurial spaces: a systematic literature review and conceptualization", Technological Forecasting and Social Change, 2025

Publication

<1 %

27 americanjournal.us

Internet Source

<1 %

28 sdgs.un.org

Internet Source

<1 %

29 Ahmed Chemseddine Bouarar, Smail Mouloudj, Kamel Mouloudj. "chapter 3 Digital Transformation", IGI Global, 2022

Publication

<1 %

30 Tri Setio Utomo Suharto. "Analisis Integratif Design Thinking dan Artificial Intelligence dalam Mendorong Inovasi UMKM di Indonesia", bit-Tech, 2025

Publication

<1 %

31 edhe.co.za

Internet Source

<1 %

32 eprints.utem.edu.my

Internet Source

<1 %

33 ijrrjournal.com

Internet Source

<1 %

34 libweb.kpfu.ru

Internet Source

<1 %

35 theses.gla.ac.uk

Internet Source

<1 %

36 Antonio M.I. Cosma, Luca Silvestri, Aurora Coloca, Luigino Filice. "How Industry 4.0 is shaping the future of a disadvantaged region:

<1 %

37 Batara Surya, Firman Menne, Hernita Sabhan, <1 %
Seri Suriani, Herminawaty Abubakar,
Muhammad Idris. "Economic Growth,
Increasing Productivity of SMEs, and Open
Innovation", Journal of Open Innovation:
Technology, Market, and Complexity, 2021

Publication

38 Manjiang Xing, Chi Gong, Gyu-Hyen Moon, <1 %
Xiaohong Ge. "Digital economy, dual
innovation capability and enterprise labor
productivity", International Review of
Financial Analysis, 2025

Publication

39 Oscar Chrismadian Noventa. "MODERATING <1 %
EFFECT OF MANAGERIAL AND PROFESSIONAL
ASSISTANCE ON INNOVATION STRATEGY AND
ACADEMIC SPIN-OFF MANAGEMENT",
Airlangga Journal of Innovation Management,
2021

Publication

40 docs.neu.edu.tr <1 %
Internet Source

41 ejournal.insuriponorogo.ac.id <1 %
Internet Source

42 journal.literasisainsnusantara.com <1 %
Internet Source

43 journal.stkipsingkawang.ac.id <1 %
Internet Source

44 text-id.123dok.com <1 %
Internet Source

45	www.scilit.net Internet Source	<1 %
46	www.scribd.com Internet Source	<1 %
47	www.zbw.eu Internet Source	<1 %
48	Ali Idrus, Supian, KA. Rahman, Yudo Handoko. "Integration of Self-Actualization and Self-Efficacy in the Formation of Islamic Character in Islamic Boarding Schools", Nidhomul Haq : Jurnal Manajemen Pendidikan Islam, 2025 Publication	<1 %
49	Dejan Uršič, Tomaž Čater. "Digital innovation in management and business: A comprehensive review, multi-level framework, and future research agenda", Journal of Business Research, 2025 Publication	<1 %
50	Dorojatun Prihandono, Angga Pandu Wijaya, Bayu Wiratama, Widya Prananta, Syam Widia. "Digital transformation to enhance Indonesian SME performance: Exploring the impact of market competition and digital strategy", Problems and Perspectives in Management, 2024 Publication	<1 %
51	Francis Kamewor Tetteh, Kwaku Kyei Gyamerah, Bright Nyamekye, Gabriel Atiki, Raphael Ashia. "Digital transformation and business model innovation: the relevance of strategic orientations under varying conditions of competitive intensity", Journal of Manufacturing Technology Management, 2025	<1 %

52 Guohua Yu, Yingying Qi, Yimeng Ren. "FinTech adoption and farmers' wealth distribution: Evidence from a large micro-data in China", Finance Research Letters, 2025

Publication

<1 %

53 Huan Peng, Sulidan Bumailikaimu, Ting Feng. "The power of market: Venture capital and enterprise digital transformation", The North American Journal of Economics and Finance, 2024

Publication

<1 %

54 Ridho Bramulya Ikhsan, Yudi Fernando, Hartiwi Prabowo, Yuniarty, Anderes Gui, Engkos Achmad Kuncoro. "An empirical study on the use of artificial intelligence in the banking sector of Indonesia by extending the TAM model and the moderating effect of perceived trust", Digital Business, 2025

Publication

<1 %

55 aisel.aisnet.org

Internet Source

<1 %

56 dinastires.org

Internet Source

<1 %

57 ebin.pub

Internet Source

<1 %

58 essay.utwente.nl

Internet Source

<1 %

59 f1000research.com

Internet Source

<1 %

60 hightechjournal.org

Internet Source

<1 %

61	Internet Source	<1 %
62	journal.unesa.ac.id Internet Source	<1 %
63	managementworld.online Internet Source	<1 %
64	openscholar.dut.ac.za Internet Source	<1 %
65	press.um.si Internet Source	<1 %
66	pt.slideshare.net Internet Source	<1 %
67	repository.maranatha.edu Internet Source	<1 %
68	repository.uwtsd.ac.uk Internet Source	<1 %
69	salford-repository.worktribe.com Internet Source	<1 %
70	www-emerald-com-443.webvpn.sxu.edu.cn Internet Source	<1 %
71	www.coursehero.com Internet Source	<1 %
72	www.diva-portal.org Internet Source	<1 %
73	www.scielo.br Internet Source	<1 %
74	www.ssbfnct.com Internet Source	<1 %
75	"Sustainable Business Management and Digital Transformation: Challenges and Opportunities in the Post-COVID Era",	<1 %

76

M. Affan Badar, Ruchika Gupta, Priyank
Srivastava, Imran Ali, Elizabeth A. Cudney.
"Handbook of Digital Innovation,
Transformation, and Sustainable
Development in a Post-Pandemic Era", CRC
Press, 2024

Publication

<1 %

77

Ndivhuho Tshikovhi, Fulufhelo Netswera,
Ravinder Rena. "Entrepreneurship in the
BRICS - Economic Development and Growth
in the Post-Pandemic World", Routledge, 2024

Publication

<1 %

Exclude quotes On

Exclude matches Off

Exclude bibliography On

JURNAL ILMIAH MANAJEMEN KESATAUN

Title of Manuscript :The Impact of Digital Transformation and Business Incubation on Small and Medium Enterprises (SMEs) Business Performance

Script ID : 3441

No	Category	Provision	Corrections by Author	Page
1.	Title	The title of the manuscript must be a maximum of 20 words and must not be more than two lines.	The Role of Digital Transformation and Business Incubation on SME Performance in Indonesia	1
		The title must reflect the substance of the article's contents clearly and specifically.	Customized	1
2.	Author Identity	Author names, institutional affiliations, and correspondence emails should not be included in the main manuscript (blind). Identities are only included through submission metadata in OJS.	Customized	1
		If the manuscript still includes the author's identity, please delete it first to maintain the principle of blind review.	Customized	1
3.	Abstract	Abstracts must be presented in two languages: Indonesian and English.	In this rapidly evolving digital era, digital transformation and business incubation have been identified as key determinants in driving improved performance of Small and Medium Enterprises (SMEs) in Indonesia. A quantitative study, using an explanatory approach, specifically investigated how these two aspects affect 200 SMEs in Indonesia that have actively adopted digital technology and participated in incubation programs. The research data was collected through a comprehensive questionnaire and analyzed in depth using multiple linear regression methods. The results show that digital transformation has a significant and positive impact on SME business performance. This impact is mainly manifested through the utilization of strategies	1

			such as the use of e-commerce, the implementation of an efficient digital management system, and the optimization of social media, which collectively contribute to increased operational efficiency and expanded market reach. Furthermore, incubation programs have also been shown to play a crucial role in improving performance, by providing relevant training, expert mentoring, and vital access to business networks. Overall, this study confirms that the synergy between digital transformation and business incubation substantially improves SME performance. ABSTRACT In this rapidly evolving digital era, digital transformation and business incubation have been identified as key determinants in driving improved performance of Small and Medium Enterprises (SMEs) in Indonesia. A quantitative study, using an explanatory approach, specifically investigated how these two aspects impact 200 SMEs in Indonesia that have actively adopted digital technologies and participated in incubation programs. The research data were collected through a comprehensive questionnaire and analyzed in depth using multiple linear regression methods. The results showed that digital transformation has a significant and positive impact on SME business performance. This	
--	--	--	---	--

			impact is mainly realized through the utilization of strategies such as the use of e-commerce, the implementation of efficient digital management systems, and the optimization of social media, which collectively contribute to increased operational efficiency and expanded market reach. Furthermore, incubation programs have also been shown to play a significant role in improving performance, by providing relevant training, expert mentoring, and essential access to business networks. Overall, this study confirms that the synergy between digital transformation and business incubation substantially improves SME performance.	
		Abstracts in both languages must be on 1 page, on the title page only.	Customized	1
		Maximum length 200 words accompanied by 4-6 keywords	Customized	1
4.	Article Structure	Articles must consist of the following sections: - Introduction - Literature Review and Hypothesis Development - Research Method - Results - Discussion - Conclusions and Suggestions	Customized	1-8
		Minimize the use of excessive subheadings. Make sure that each subheading is accompanied by adequate and proportional discussion.	Customized	1-8
5.	Tables and Figures	Tables and figures must be numbered sequentially (Table 1, Figure 1, etc.), and have a title in English.	Customized	4-7
		Make sure that every table and figure included in the manuscript is cited or explicitly referenced in the text.	Customized	4-7
		Use international standards for writing numbers (comma for thousands, and dot for decimals)	Customized	4-7
6.	Citation Style	Citation and bibliography styles must follow the APA Style 6th edition format.	Customized	1-8
		Make sure all quotes used are listed in the bibliography, and vice versa.	Customized	1-8

		It is recommended to use a reference manager such as Mendeley or Zotero for citation consistency.	Customized	8-9
7.	References and Citations	There must be at least 30 relevant and quality scientific references (journals, proceedings, reference books) from reputable international sources in English.	Customized	8-9
		As many as 80% of references should come from journals published in the last 5 years.	Customized	8-9
		Authors are required to cite relevant articles from journals published by IBI Kesatuan (JIMKES, JIAKES and Riset), and mark them in the revised manuscript.	Customized	8-9
8.	Plagiarism and Originality	Submit the plagiarism check results with a maximum score of 20% (using Turnitin or similar tools).		

*All repairs must be marked/highlighted with **yellow** either for editorial or substantive improvements from the reviewer

**7. Bukti Konfirmasi Artikel
Accepted Oleh Editor Jurnal
(29 Juni 2025)**



Alif RinggaPersada <alifringga@upi.edu>

[JIMKES] Editor Decision

1 message

Annisa <assistant1459@gmail.com>
To: Alif Ringga Persada <alifringga@upi.edu>

Sun, Jun 29, 2025 at 6:25 PM

Alif Ringga Persada, Hari Mulyadi, A. Jajang Warya Mahri, Chairul Furqon:

We have reached a decision regarding your submission to Jurnal Ilmiah Manajemen Kesatuan, "The Impact of Digital Transformation and Business Incubation on Small and Medium Enterprises (SMEs) Business Performance".

Our decision is to: Accept Submission

[Jurnal Ilmiah Manajemen Kesatuan](#)

Notifications



[JIMKES] Editor Decision

2025-06-29 11:25 AM

Alif Ringga Persada, Hari Mulyadi, A. Jajang Warya Mahri, Chairul Furqon:

We have reached a decision regarding your submission to Jurnal Ilmiah Manajemen Kesatuan, "The Impact of Digital Transformation and Business Incubation on Small and Medium Enterprises (SMEs) Business Performance".

Our decision is to: Accept Submission

[Jurnal Ilmiah Manajemen Kesatuan](#)

**8. Bukti Konfirmasi Artikel
Terpublikasi Online (1 Juli 2025)**



Alif RinggaPersada <alifringga@upi.edu>

JIMKES (Vol. 13 No. 4 - July 2025)- An issue has been published

1 message

JIMKES IBIK <jimkes.ibikjurnal@gmail.com>
AMTo: alifringga@upi.edu

Tues, Jul 1, 2025 at 10:05

Dear Author,

We are pleased to inform you that the issue Vol. 13 No. 4 (July 2025) of Jurnal Ilmiah Manajemen Kesatuan (JIMKES) has been officially published.

Congratulations on your valuable contribution to this edition.

You can view the published issue at the following link: <https://jurnal.ibik.ac.id/index.php/jimkes/issue/view/154>

We look forward to receiving your future research and continued collaboration in upcoming editions of JIMKES.

Warm regards,

Editorial Team

Jurnal Ilmiah Manajemen Kesatuan (JIMKES)



HOME / ARCHIVES / VOL. 13 NO. 4 (2025): JIMKES EDISI JULI 2025 / Articles

Digital Transformation and Business Incubation on SME Performance in Indonesia

Alif Ringga Persada

Universitas Pendidikan Indonesia, Indonesia

Hari Mulyadi

Universitas Pendidikan Indonesia, Indonesia

A. Jajang Warya Mahri

Universitas Pendidikan Indonesia, Indonesia

Chairul Furqon

Universitas Pendidikan Indonesia, Indonesia

DOI: <https://doi.org/10.37641/jimkes.v13i4.3441>

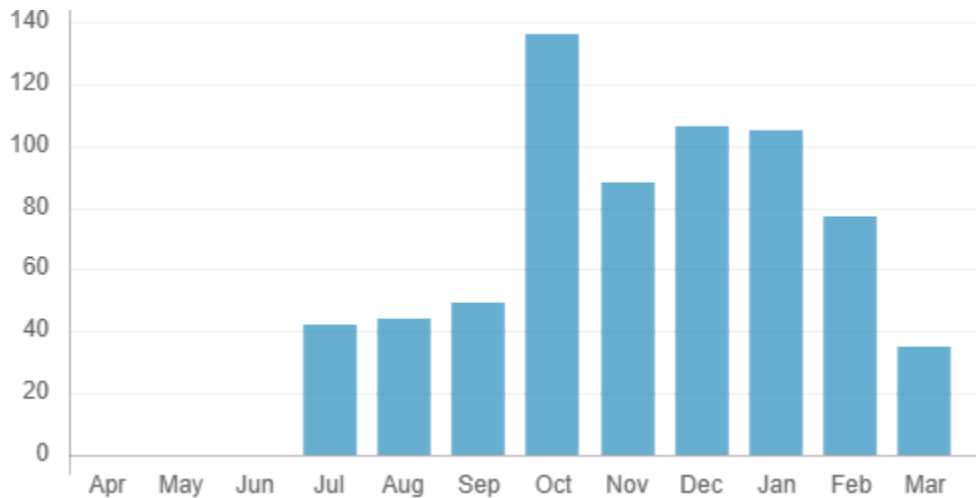
Keywords: Business Incubation, Business Performance, Digital Transformation, SMEs

ABSTRACT

In this rapidly evolving digital era, digital transformation and business incubation have been identified as key determinants in driving improved performance SMEs in Indonesia. A quantitative study, using an explanatory approach, specifically investigated how these two aspects affect 200 SMEs in Indonesia that have actively adopted digital technology and participated in incubation programs. The information for the study was collected through an extensive survey and analyzed in depth using multiple linear regression methods. The findings suggest that digital transformation possesses a significant and positive impact on SME business performance. This impact is mainly manifested through the utilization of strategies such as the use of e-commerce, the implementation of an efficient digital management system, and the optimization of social media, which collectively contribute to increased operational efficiency and expanded market reach. Furthermore, incubation programs have also been shown to play a crucial

role in improving performance, by providing relevant training, expert mentoring, and vital access to business networks. Overall, this study confirms that the synergy between digital transformation and business incubation substantially improves SME performance.

DOWNLOADS



REFERENCES

- Alawi, M., Rashid, N., Al-Shami, S. A., & Al-Lamy, H. A. (2018). The determinants of E-commerce quality on small business performance in Iraq case study from ceramic industry. *Journal of Advanced Research in Dynamical and Control Systems*, 10(2), 70-74.
- Ausat, A. M. A., Astuti, E. S., & Wilopo. (2022). Analysis Of Factors That Influence On E-Commerce Adoption And Their Impacts For Sme Performance In Subang District. *Jurnal Teknologi Informasi Dan Ilmu Komputer (JTIK)*, 9(2), 30-45.
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 121-131.
- Bergek, A., & Norrman, C. (2008). Incubator best practice: A framework. *Technovation*, 28(1-2), 20-28.
- Chibelushi, C., & Costello, P. (2009). Challenges facing W. Midlands ICT-oriented SMEs. *Journal of Small Business and Enterprise Development*, 16(2), 202-220.
- Chiu, W., & Cho, H. (2019). E-commerce brand: The effect of perceived brand leadership on consumers' satisfaction and repurchase intention on e-commerce websites. *Asia Pacific Journal of Marketing and*

Logistics, 33(6), 333-343.

Esses, D., Csete, M. S., & Németh, B. (2021). Sustainability and digital transformation in the visegrad group of central european countries. *Sustainability (Switzerland)*, 13(11), 151-162.

Ghozali, I. (2017). Aplikasi analisis multivariate dengan program IBM SPSS 23. [Multivariate analysis application with the IBM SPSS 23 program]. Semarang: Badan Penerbit Universitas Diponegoro(2016). [in Bahasa Indonesia]. R/PPM/2017 dated May 22nd.

Hackett, S. M., & Dilts, D. M. (2004). A Systematic Review of Business Incubation Research. *The Journal of Technology Transfer*, 29(1), 152-163.

Hamdi, K., Yadewani, D., & Wijaya, R. (2021). Media Sosial Instagram Dalam Mendukung Promosi Usaha Sebagai Sebuah Pilihan Atau Paksaan. *Jurnal Pustaka Mitra (Pusat Akses Kajian Mengabdi Terhadap Masyarakat)*, 1(2), 41-56.

Hess, T., Benlian, A., Matt, C., & Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive*, 15(2), 345-355.

Johnson, H., Roberts, O., & Wilson, G. (2024). Exploring the Economic Resilience of Small and Medium Enterprises (SMEs) During Financial Crises. *Jurnal...*, 6(2), 32-42.

Kowerdziej, R., Parka, J., Krupka, J., Olifierczuk, M., Nowinowski-Kruszelnicki, E., Jaroszewicz, L., & Chojnowska, O. (2013). Dielectric properties of highly anisotropic nematic liquid crystals for tunable microwave components. *Applied Physics Letters*, 103(17), 151-177.

Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2019). Digital entrepreneurship: A research agenda on new business models for the twenty-first century. *International Journal of Entrepreneurial Behavior & Research*, 25(2), 353-375.

Liu, D. Y., Chen, S. W., & Chou, T. C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision*, 49(10), 171-181.

Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering*, 57, 339-343.

Matt, D. T., & Rauch, E. (2020). SME 4.0: The role of small-and medium-sized enterprises in the digital transformation. In *Industry 4.0 for SMEs: Challenges, opportunities and requirements* (pp. 3-36). Cham: Springer International Publishing.

- Mrugalska, B., & Ahmed, J. (2021). Organizational agility in industry 4.0: A systematic literature review. *Sustainability (Switzerland)*, 13(15), 12-25.
- Mulyadi, M. (2011). Penelitian kuantitatif dan kualitatif serta pemikiran dasar menggabungkannya. *Jurnal studi komunikasi dan media*, 15(1), 128-137.
- Napitu, U., Corry, Sinurat, A., Harianja, T., Ease Arent, Mardiani, Nasution, A. M., & Napitu, H. (2023). Sosialisasi Peran Perguruan Tinggi Dan Akademisi Sebagai Inkubator Bisnis Dalam Penguatan Koperasi Sebagai Lembaga Ekonomi Kerakyatan Menuju Koperasi Modern Bagi Pelaku Ukm Di Sumatera Utara. *Jurnal Pengabdian Masyarakat Sapangambe Manoktok Hitei*, 2(1), 132-143.
- Nazaruddin, I., Utami, E. R., & Rahmawati, E. (2024). Digitalization Challenges for SMEs: A Systematic Literature Review Perspective and Future Research. *JBTI: Jurnal Bisnis: Teori Dan Implementasi*, 15(1), 15–43.
- Opland, L. E., Pappas, I. O., Engesmo, J., & Jaccheri, L. (2022). Employee-driven digital innovation: A systematic review and a research agenda. *Journal of Business Research*, 143-145.
- Phan, P. H., Siegel, D. S., & Wright, M. (2005). Science parks and incubators: Observations, synthesis and future research. *Journal of Business Venturing*, 20(2), 514-524.
- Plekhanov, D., Franke, H., & Netland, T. H. (2023). Digital transformation: A review and research agenda. *European Management Journal*, 41(6), 414-424.
- Prasanna, R. P. I. R., Jayasundara, J. M. S. B., Naradda Gamage, S. K., Ekanayake, E. M. S., Rajapakshe, P. S. K., & Abeyrathne, G. A. K. N. J. (2019). Sustainability of SMEs in the competition: A systemic review on technological challenges and SME performance. *Journal of Open Innovation: Technology, Market, and Complexity*, 5(4), 100.
- Ridhovan, A. R., & Anggarani, A. (2024). Innovative Strategies of Change Management in the Indonesian Banking Industry in an Election Year. *Jurnal Ilmiah Manajemen Kesatuan*, 12(5), 1899-1906.
- Rodrigues, R. I., Lopes, P., & Varela, M. (2021). Factors affecting impulse buying behavior of consumers. *Frontiers in Psychology*, 12(4), 478-482.
- Sari, M., Rachman, H., Juli Astuti, N., Win Afgani, M., & Abdullah Siroj, R. (2022). Explanatory Survey dalam Metode Penelitian Deskriptif Kuantitatif. *Jurnal Pendidikan Sains Dan Komputer*, 3(01) 87-99.
- Sekaran, U. (2016). *Research methods for business: A skill building approach*. New York: John Wiley & Sons.

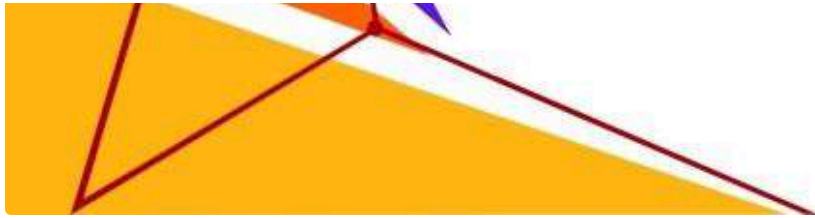
- Soni, G., Kumar, S., Mahto, R. V., Mangla, S. K., Mittal, M. L., & Lim, W. M. (2022). A decision-making framework for Industry 4.0 technology implementation: The case of FinTech and sustainable supply chain finance for SMEs. *Technological Forecasting and Social Change*, 4(2), 180-187.
- Stephens, S., & Miller, K. (2022). Business incubation as a community of practice: an emergent cultural web. *Entrepreneurship & Regional Development*, 34(9-10), 890-910.
- Sugiyono, P. D. (2018). Quantitative, qualitative, and combination research methods (Mixed methods). Bandung: Alfabeta CV.
- Surya, B., Menne, F., Sabhan, H., Suriani, S., Abubakar, H., & Idris, M. (2021). Economic growth, increasing productivity of smes, and open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 151-165.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 121-134.
- Vial, S. (2019). *Being and the screen: How the digital changes perception*. Published in one volume with a short treatise on design. Massachusetts: MIT Press.
- Westerman, G., Bonnet, D., & McAfee, A. (2014). *Leading digital: Turning technology into business transformation*. Massachusetts: Harvard Business Press.
- White, H. C. (2008). *Identity and control: How social formations emerge*. New Jersey: Princeton university press.
- Widagdo, S., Ratnasari, E., & Mandala, S. (2019). Internal Factor Analysis In Management Control System Design With Organizational Objectives As Intervening Variables In Blood Transfusion Unitpmi Jember. *Sinergi: Jurnal Ilmiah Ilmu Manajemen*, 9(2), 189-201.
- Van Scheers, L. (2016). SMEs and social media opportunities: An organizational outlook. *Corporate Ownership & Control*, 13(4), 640-648.
- Yusuf, M., 'Ardhuha, J., & Hikmawati, H. (2022). Pengembangan Perangkat Pembelajaran Model Problem Based Learning untuk Meningkatkan Pemahaman Konsep Fisika dan Kemampuan Berpikir Kritis Peserta Didik. *Jurnal Ilmiah Profesi Pendidikan*, 7(2), 177-188.
- Zhou, H., & Zondo, R. W. D. (2023). The Role Of Business Incubation Programmes On The Performance Of Small And Medium Enterprises In South Africa. *The Seybold Report*, 18(5), 444-458.

EISSN : 2721-169X
PISSN : 2337-7860



JURNAL ILMIAH
Manajemen Kesatuan

Published by
LPPM Intistitut Bisnis dan
Informatika

 **FULL TEXT**

PUBLISHED

2025-07-01

HOW TO CITE

Persada, A. R., Mulyadi, H., Mahri, A. J. W., & Furqon, C. (2025). Digital Transformation and Business Incubation on SME Performance in Indonesia. *Jurnal Ilmiah Manajemen Kesatuan*, 13(4), 2183–2194. <https://doi.org/10.37641/jimkes.v13i4.3441>

More Citation Formats 

ISSUE

Vol. 13 No. 4 (2025): JIMKES Edisi Juli 2025

SECTION


Articles

LICENSE

Copyright (c) 2025 Jurnal Ilmiah Manajemen Kesatuan

This work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/).



Kementerian Pendidikan Tinggi,
Sains, dan Teknologi

SERTIFIKAT Akreditasi Jurnal



No. SK : 10/C/C3/DT.05.00/2025

Tanggal : 21 Maret 2025

Direktur Penelitian, dan Pengabdian kepada Masyarakat
dengan ini memberikan kepada

Jurnal Ilmiah Manajemen Kesatuan

EISSN : 2721169X

Publisher : Institut Bisnis dan Informatika Kesatuan

Peringkat Akreditasi Jurnal Ilmiah Periode I 2025

Akreditasi Ulang di Peringkat 2 mulai
Volume 12 Nomor 6 Tahun 2024 sampai Volume 17 Nomor 5 Tahun 2029



I Ketut Adnyana
NIP 196805151994031004

🕒 Focus & Scope

🕒 Journal History

📄 Policies

☰ Author Guidelines

👥 Editorial Team

👥 Peer Reviewers

 Journal Contact

 Download

 Peer Review Process

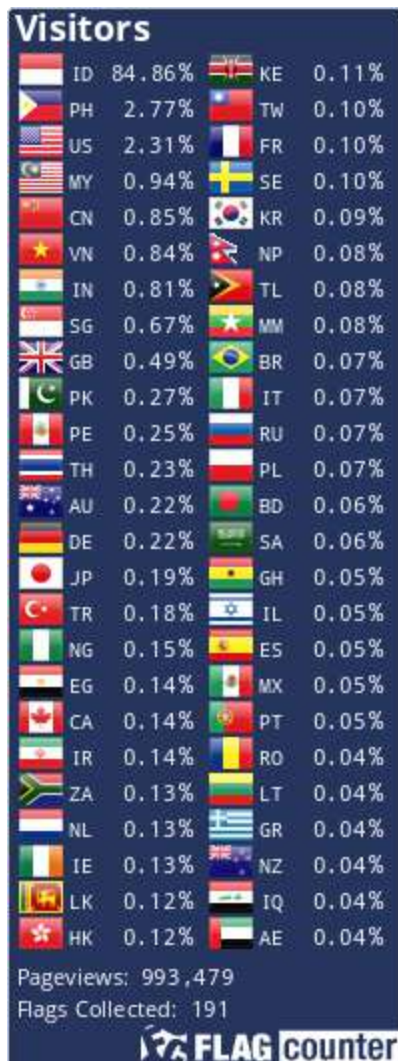
 Article Template

 Charge

 Open Access Statement

 Copyright & License

 Lihat Statistik JIMKES [View MyStat](#)



ISSN BARCODE

ISSN BARCODE



[LPPM Institut Bisnis dan Informatika Kesatuan](#)

Jalan Ranggagading No. 1 Bogor 16123 Telepon 0251 8337733

JIMKES is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](#)

Platform &
workflow by
OJS / PKP

Notifications



[JIMKES] Editor Decision

2025-07-01 07:07 AM

Alif Ringga Persada, Hari Mulyadi, A. Jajang Warya Mahri, Chairul Furqon:

The editing of your submission, "The Impact of Digital Transformation and Business Incubation on Small and Medium Enterprises (SMEs) Business Performance," is complete. We are now sending it to production.

Submission URL: <https://jurnal.ibik.ac.id/index.php/jimkes/authorDashboard/submission/3441>

[Jurnal Ilmiah Manajemen Kesatuan](#)

Digital Transformation and Business Incubation on SME Performance in Indonesia

Digital Transformation
and Business
Incubation

Alif Ringga Persada

Universitas Pendidikan Indonesia; Bandung, Indonesia

E-Mail: alifringga@upi.edu

2183

Hari Mulyadi

Universitas Pendidikan Indonesia; Bandung, Indonesia

A. Jajang Warya Mahri

Universitas Pendidikan Indonesia; Bandung, Indonesia

Submitted:
JAN 2025

Chairul Furqon

Universitas Pendidikan Indonesia; Bandung, Indonesia

Accepted:
JUNE 2025

ABSTRACT

In this rapidly evolving digital era, digital transformation and business incubation have been identified as key determinants in driving improved performance SMEs in Indonesia. A quantitative study, using an explanatory approach, specifically investigated how these two aspects affect 200 SMEs in Indonesia that have actively adopted digital technology and participated in incubation programs. The information for the study was collected through an extensive survey and analyzed in depth using multiple linear regression methods. The findings suggest that digital transformation possesses a significant and positive impact on SME business performance. This impact is mainly manifested through the utilization of strategies such as the use of e-commerce, the implementation of an efficient digital management system, and the optimization of social media, which collectively contribute to increased operational efficiency and expanded market reach. Furthermore, incubation programs have also been shown to play a crucial role in improving performance, by providing relevant training, expert mentoring, and vital access to business networks. Overall, this study confirms that the synergy between digital transformation and business incubation substantially improves SME performance.

Keywords: Business Incubation, Business Performance, Digital Transformation, SMEs.

ABSTRAK

Di era digital yang terus berkembang pesat ini, transformasi digital dan inkubasi bisnis telah diidentifikasi sebagai penentu utama dalam mendorong peningkatan kinerja Usaha Kecil dan Menengah (UKM) di Indonesia. Sebuah studi kuantitatif, dengan menggunakan pendekatan eksplanatif, secara khusus menyelidiki bagaimana kedua aspek ini memengaruhi 200 UKM di Indonesia yang telah secara aktif mengadopsi teknologi digital dan berpartisipasi dalam program inkubasi. Data penelitian dikumpulkan melalui kuesioner yang komprehensif dan dianalisis secara mendalam menggunakan metode regresi linier berganda. Hasil penelitian menunjukkan bahwa transformasi digital memiliki dampak yang signifikan dan positif terhadap kinerja bisnis UKM. Dampak ini terutama diwujudkan melalui pemanfaatan strategi seperti penggunaan e-commerce, penerapan sistem manajemen digital yang efisien, dan optimalisasi media sosial, yang secara kolektif berkontribusi pada peningkatan efisiensi operasional dan perluasan jangkauan pasar. Lebih jauh, program inkubasi juga telah terbukti memainkan peran penting dalam meningkatkan kinerja, dengan memberikan pelatihan yang relevan, pendampingan ahli, dan akses penting ke jaringan

JIMKES

Jurnal Ilmiah Manajemen
Kesatuan
Vol. 13 No. 4, 2025
pp. 2183-2194
IBI Kesatuan
ISSN 2337 – 7860
E-ISSN 2721 – 169X
DOI: 10.37641/jimkes.v13i4.3441

INTRODUCTION

Digital transformation has become a global phenomenon that is significantly reshaping the business landscape. No longer a discretionary effort, digital transformation has evolved into a vital strategic imperative for all types of enterprises, including Small and Medium Enterprises (SMEs), particularly in an age marked by rapid advancements in information and communication technologies. Its influence extends beyond business performance and plays a key role in advancing the Sustainable Development Goals (SDGs). Technologies like artificial intelligence, cloud computing, and the Internet of Things play a crucial role in facilitating the realization of the SDGs, highlighting the strategic importance of digital transformation (Plekhanov et al., 2023; Ridhovan & Anggarani, 2024). In addition to optimizing business efficiency, digital transformation contributes to social equity, environmental protection, and economic development, thus reinforcing its integral role in sustainable progress (Esses et al., 2021). The SDGs, established in 2015 by 193 member states of the United Nations, represent a universal blueprint to achieve sustainability by 2030. They encompass 17 goals and 169 specific targets, each aimed at fostering inclusive and equitable global development (Wijaya et al., 2024). In this context, digital transformation emerges not only as a business enabler but also as a fundamental driver in achieving long-term developmental and sustainability outcomes.

Digital transformation can help SMEs to improve their performance, which can ultimately contribute to achieving SDGs, namely SDG 1 (Eradicating Poverty) and SDG 8 (Decent Work and Economic Growth). Then, even though Industry 4.0 technology has the potential to improve business performance, numerous studies highlight the difficulties faced by small and medium-sized enterprises (SMEs) may face during the adoption of this technology (Soni et al., 2022; Nazaruddin et al., 2024). SMEs often face constraints related to resource availability, market access, and technological capabilities, adoption of digital transformation can serve as an important mechanism for survival and achieving sustainable growth in an increasingly competitive business environment.

SMEs to increase their competitiveness in today's business, SMEs must effectively utilize information technology and enhance and apply their skills and abilities (Prasanna et al., 2019; Rodrigues et al., 2021; Yusuf et al., 2022; Nazaruddin et al., 2024). Furthermore, it is very important to improve corporate strategy by using information technology and optimizing work processes (Mrugalska & Ahmed, 2021) which involves utilizing computer systems and improving business performance in addressing market demands (Chiu & Cho, 2019; Mrugalska & Ahmed, 2021; Surya et al., 2021). The importance of information technology in business is widely recognized (Kowrdziej et al., 2013). Digitalization is a multifaceted phenomenon that encompasses various dimensions, including digital entrepreneurship, digital strategy, digital processes, and digital education (Kraus et al., 2019).

In addition to digital transformation, business incubation plays an essential part in the development and progress of small and medium-sized business (SMEs). Business incubation facilitates entry to critical resources that these firms may not have otherwise, including financial support, managerial expertise, professional networks, and opportunities for training and development. As a result, business incubation builds a stronger foundation for SMEs to start, operate, and expand their businesses more effectively. Technology and organization positively influence e-commerce adoption and SME performance (Ausat et al., 2022). Incubated firms outperform non-incubated firms due to tailored business support services. Incubated firms benefit from more employees, not incubated from the owner's experience (Zhou & Zondo, 2023). Business incubators

support the growth and development of SMEs in developing countries (Napitu et al., 2023).

While the advantages of digital transformation and business incubation have been thoroughly explored individually in existing literature, a significant research gap remains in assessing their combined impact on MSME performance, particularly in developing nations like Indonesia. Previous research by Johnson et al., (2024) has not investigated extensively the interplay between these two elements in fostering long-term competitive advantage or determining the success factors of their integration. This research aims to tackle this issue by empirically analyzing the concurrent impacts of digital transformation and business incubation on MSME performance, while also pinpointing effective strategies to enhance MSME competitiveness in the digital age. This study's primary contribution is to present a fresh conceptual framework and pertinent empirical data that bolster technology-driven MSME development policies and strategies in Indonesia.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

Digital Transformation and Business Performance

Digital transformation emerges from the convergence of personal and organizational IT technologies, characterized by the influence of advanced technologies like cloud computing, social media, mobile platforms, analytics, and the Internet of Things known as SMACIT technologies (White, 2008). This transformation entails the incorporation of digital technologies into fundamental business activities within the framework of the digital economy (Liu et al., 2011), as well as the use of innovation to optimize organizational functions and expand global reach (Westerman & Bonnet, 2014). According to Hess et al. (2016), digital transformation affects organizations at three levels: the business life cycle and customer experience, internal aspects such as strategic goals and organizational structure, and the emergence of new business models. Vial & Baudoin (2019) emphasize that digital transformation changes the way organizations work, think, and provide services. It involves the adoption of instruments like online retail, social platforms, large data sets, and cloud technology to improve performance, drive innovation, and maintain competitiveness (Matt et al., 2015).

The implementation of digital technology by SMEs is influenced by several factors according to Rogers' (2003) diffusion of innovation theory, such as relative advantage, fit with business processes, complexity, trial, and observable results. From the Resource-Based View (RBV) perspective, digital technology is a strategic resource that can create competitive advantage if managed properly (Barney, 1991; Widagdo et al., 2019). Utilization of the internet is now a basic need for SMEs to grow. The use of social media allows SMEs to reach customers more widely and manage relationships effectively (Van Scheers, (2016), while e-commerce strengthens relationships with clients (Alawi et al., 2018). Platforms such as Instagram are also effective for product promotion (Hamdi et al., 2021). However, the digital transformation process is not free from challenges, such as budget constraints, lack of digital literacy, and resistance to change (Chibelushi & Costello, 2009). Based on this description, this hypothesis is used.

H1: Digital transformation has a positive impact on MSME business performance.

Business Incubation and Business Performance

Business incubation is a program designed to support the growth and development of SMEs by providing various resources, such as funding, mentoring, training, and access to a broad business network. The definition of business incubation emphasizes that business incubators not only provide structural support to SMEs but also act as catalysts in accelerating business growth through various interventions focused on the specific needs of small businesses (Stephens & Miller, 2022).

In the digital era, the function of business incubation is becoming increasingly important because digital transformation requires skills and knowledge that may not be possessed by all entrepreneurs. Business incubation can help bridge this gap by providing

access to the latest technologies and assisting SMEs in the process of digitizing their businesses. Business incubators also provide the training needed to master digital tools and implement them in business operations, which can ultimately improve the efficiency and performance of SMEs as a whole (Sari et al., 2022; Opland et al., 2022).

Business incubation helps start-ups and small businesses in their early stages. Business incubation provides the support they need to grow and succeed over time (Hackett & Dilts, 2004). Business incubation is all about helping new ventures. Business incubation offers mentorship in management, teaches entrepreneurial skills, connects people to networks, and helps them find the funding they need (Phan et al., 2005). In the small business world, incubation serves as a lifeline. Incubation lightens the burden of scarce resources and reduces the chances of failure. With mentorship and support, incubation creates a path forward. Therefor on this description, this hypothesis is proposed.

H2: Business incubation has a positive effect on MSME business performance.

Digital Performance, Business Incubation to Business Performance

SMEs business performance covers various aspects, such as achieving financial targets, customer satisfaction, operational efficiency, and continuous innovation. This definition is emphasizes that business performance is not only measured from the financial aspect but also from how SMEs are able to maintain customer satisfaction and continue to innovate to stay relevant in the market (Mulyadi, 2013).

In the digital era, SMEs business performance is increasingly determined by their ability to adopt and utilize digital technology. SMEs that successfully integrate digital technology into their operations tend to be more efficient and able to offer products or services that are more in line with market needs. In addition, continuous innovation using technology is also an important factor in maintaining gaining a competitive edge and enhancing long-term company success (Johnson et al., 2024).

SME business performance in the digital era is highly dependent on their ability to utilize digital technology as a tool to improve operational efficiency, meet customer needs, and continue to innovate. Thus, measuring SME business performance must include not only the financial aspect but also their ability to adapt to technological changes and dynamic markets.

H3: The concurrent implementation of digital transformation and business incubation positively influences the performance of MSMEs.

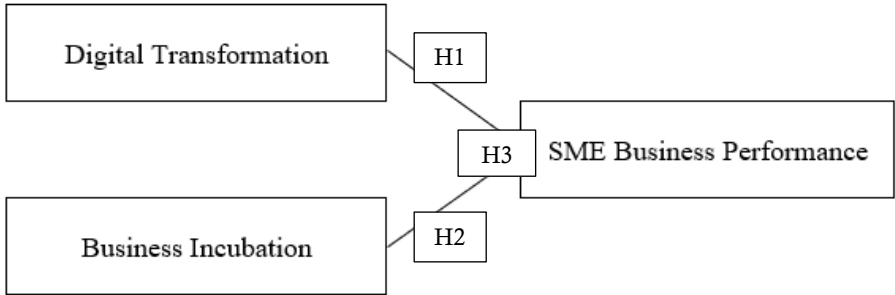


Figure 1. Research framework

The Figure 1 shows a conceptual model of the relationship between two independent variables and one dependent variable, namely Digital Transformation, Business Incubation, and MSME Business Performance. From Figure 1, it shows that Digital Transformation and Business Incubation act as factors that influence MSME business performance, namely Digital Transformation exerts a favorable influence on MSME Business Performance, and Business Incubation positively impacts MSME Business Performance.

RESEARCH METHOD

This research employs an explanatory design and a quantitative methodology. Explanatory research aims to elucidate the relationship between multiple symptoms or variables and explain the causes of an event. This study will explain the causal relationship between the independent variables (digital transformation and business incubation) and the dependent variable (SME business performance). The population in this study is all MSMEs in Indonesia that have adopted digital technology in their operational activities and participated in formal business incubation programs. The selection of Indonesia as a research location is based on the strategic role of MSMEs in the national economy, where MSMEs cover more than 99% of business units and contribute more than 60% to gross domestic product (GDP). However, most MSMEs in Indonesia still face challenges such as limited access to technology, capital, and professional support in business development. Therefore, the Indonesian context provides strong empirical relevance to evaluate the effectiveness of digital transformation and business incubation as strategies to increase MSME competitiveness (Sugiyono, 2018). MSMEs that had been using digital technology for at least two years, had taken part in a business incubation program for at least a year, and were willing to participate were included in the study's sample selection criteria. Validity, reliability, normality, multicollinearity, heteroscedasticity, multiple linear regression analysis, F test, and t test were used to test the data. While reliability evaluates the consistency of the measuring tool, validity evaluates how well the questionnaire items represent the intended variables (Sekaran, 2016). The regression model assumptions were checked using tests for heteroscedasticity, multicollinearity, and normality (Ghozali, 2017). The main analysis was conducted using multiple linear regression, namely regression with one dependent variable and two or more independent variables (Sugiyono, 2018). The regression model is written as:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

where Y is the performance of SME business, α is a constant, β_1 and β_2 are the regression coefficients of each independent variable (digital transformation and business incubation), and ε is the error term. Finally, hypothesis testing is carried out through the F test to test the significance of the overall model and the t test to test the significance of the influence of each variable. The null hypothesis (H_0) is rejected if the p value < 0.05 .

RESULTS

This study involved 200 SMEs that met the inclusion criteria, namely SMEs that have implemented digital technology for at least two years and have participated in a business incubation program for at least one year. Of the 200 questionnaires distributed, all were returned and filled out, so the response rate was 100%. Below is a description of SMEs from the research sample.

Table 1. Percentage of Types of SMEs Businesses Sampled

Types of SME Businesses	Percentage
Trade Sector	35%
Service Sector	30%
Production Sector	25%
Agriculture Sector	10%

Table 1 shows a pie chart depicting the percentage of types of Small and Medium Enterprises (SMEs) based on business sectors. There are four main sectors shown. The trade sector is the sector with the largest percentage, which is 35%, indicating that most SMEs are engaged in the buying and selling of goods. Followed by the service sector which covers 30% of the total SME businesses, reflecting the important role of services in the SME economy. Furthermore, the production sector contributes 25%, which includes

manufacturing, handicrafts, and processing businesses. Finally, the agricultural sector only represents 10%, becoming the sector with the smallest contribution among the four. This data provides an overview of the structure of SME businesses in a region, where the trade and service sectors dominate economic activity. This information is useful for formulating policies and developing more targeted SME development programs based on the proportion of existing business sectors. The rest are micro businesses with less than 10 employees (20%) and medium businesses with more than 50 employees (10%). The SMEs used as samples are spread across various provinces in Indonesia, with the highest concentration in West Java (25%), DKI Jakarta (20%), East Java (15%), and other provinces (40%).

Table 2. Validity and Reliability Test

Variables	Validity	Confirmation	Cronbach's Alpha	Confirmation
Digital Transformation	> 0.34	Valid	0.89	Reliable
Business Incubation	> 0.39	Valid	0.87	Reliable
SME Business Performance	> 0.34	Valid	0.91	Reliable

Based on Table 2, the results of the validity and reliability tests, all research instruments were proven to meet the established criteria. The validity test was carried out using the Pearson Product Moment correlation, where each statement item for the three variables showed a correlation value above 0.3. The digital transformation variable has a validity value above 0.34, the business incubation variable above 0.39, and the SME business performance variable above 0.34. Thus, all items are declared valid because they are able to measure the intended theoretical construct. In addition, a reliability test was conducted to measure the internal consistency of the instrument, which was assessed through the Cronbach's Alpha value. The results showed that the digital transformation variable obtained a value of 0.89, business incubation was 0.87, and SME business performance was 0.91. All of these values far exceed the minimum threshold of 0.70, so the instrument is categorized as very reliable. This confirms that the questionnaire instrument is not only valid, but also consistent in measuring each variable accurately. Thus, this research instrument is worthy of use in further analysis to assess the influence of digital transformation and business incubation on SME business performance.

Table 3. Classical Assumption Test

Test Type	Yield Indicators	P/Criteria Value	Conclusion
Normality Test	Kolmogorov-Smirnov (p-value)	0.200 > 0.05	Normal distributed residual data
Multicollinearity Test	VIF Digital Transformation	1.723 < 10	No multicollinearity
Heteroscedasticity Test	VIF Business Incubation	1.684 < 10	No multicollinearity

Based on Table 3, the results of the classical assumption test presented in the table, it can be concluded that the regression model has met the criteria required for further analysis. The normality test using Kolmogorov-Smirnov shows a p-value of 0.200, which is greater than 0.05, indicating that the residual data is normally distributed. The multicollinearity test shows the Variance Inflation Factor (VIF) value for the Digital Transformation variable of 1.723 and Business Incubation of 1.684, both of which are far below the tolerance limit of 10, so there is no multicollinearity. The heteroscedasticity test is carried out through scatterplot analysis between the residual value and the predicted value, which shows a random distribution pattern, indicating no heteroscedasticity problems. In addition, the autocorrelation test uses the Durbin-Watson value of 1.98 which is within the normal range (1.5–2.5), indicating no autocorrelation. Thus, all classical assumptions have been met, and the regression model can be considered valid and suitable for use in hypothesis testing.

Table 4. Multiple Linear Regression Analysis

Variabel	Coefficients of Regression (β)	t-Count	Sig. (p-value)
Constant (α)	1.24	–	–
Digital Transformation (X_1)	0.45	5.87	0.000
Business Incubation (X_2)	0.38	4.96	0.000

Based on Table 4, the results of the multiple linear regression analysis in the table above, it can be concluded that the two independent variables, namely Digital Transformation (X_1) and Business Incubation (X_2), have a significant effect on SME Business Performance. First, the constant value (α) of 1.24 indicates that if Digital Transformation and Business Incubation are zero, then the baseline value of SME business performance is 1.24. Then, the regression coefficient value of Digital Transformation ($\beta = 0.45$) with a t-count of 5.87 and a significance (p-value) = 0.000, which is less than 0.05, indicates that Digital Transformation has a positive and significant effect on SME Business Performance. This means that the higher the implementation of digital transformation, the better the performance of SME businesses. Likewise with Business Incubation, which has a regression coefficient of 0.38, a t-count of 4.96, and a p-value = 0.000, indicating that Business Incubation also has a positive and significant effect on SME business performance. Overall, this model shows that both Digital Transformation and Business Incubation make significant contributions to improving SME performance.

Table 5. F Test Results

Source of Variation	(Sum of Squares)	df	(Mean Square)	F-Count	Sig. (p-value)
Back	152.34	2	76.17	45.67	< 0.001
Residual	628.76	377	1.67	0.00	0.00
Total	781.10	379	0.00	0.00	0.00

Based on Table 5 shows that the regression model used in this study is statistically significant. The F-count value of 45.67 is much greater than the F-table (with df of 2; 377), and the significance value (p-value) <0.001, which means it is smaller than 0.05. This shows that the regression model is simultaneously significant. This means that together the variables Digital Transformation and Business Incubation have a significant effect on SME Business Performance. The Regression value of 152.34 shows the variation in SME Business Performance that can be explained by the two independent variables. While the Residual of 628.76 is the remaining variation that cannot be explained by the model. Thus, this F test provides strong evidence that the regression model involving Digital Transformation and Business Incubation is able to significantly explain the variation in SME Business Performance.

Table 6. T Test Results

Independent Variables	Coefficients of Regression (β)	t-Count	Sig. (p-value)	Conclusion
Digital Transformation (X_1)	0.45	5.12	< 0.001	Significant
Business Incubation (X_2)	0.38	4.76	< 0.001	Significant

Based on Table 6, the results of the regression analysis show that digital transformation (X_1) has a positive and significant effect on SME business performance, with a regression coefficient of $\beta_1 = 0.45$, t value = 5.12, and p-value <0.001. This means that the higher the implementation of digital transformation, the better the performance of SME businesses. This shows the importance of adopting digital technology in increasing the efficiency and competitiveness of small and medium enterprises. Meanwhile, the business incubation variable (X_2) also has a positive and significant effect on SME business performance, with a regression coefficient of $\beta_2 = 0.38$, t value = 4.76, and p-value <0.001. This proves that incubation programs such as training, mentoring, and access to

business networks contribute significantly to improving business performance. Both variables are statistically proven to strengthen the competitiveness and sustainability of SME businesses in facing the challenges of the digital economy.

DISCUSSION

Based on the results of the study, it shows that digital transformation has a positive and significant impact on SME business performance. SMEs that adopt digital technology, such as the use of e-commerce, digital-based management systems, and social media, experience significant improvements in operational efficiency, market expansion, and product innovation. This shows that SMEs that adopt digital technology can achieve better business performance compared to SMEs that have not implemented digital transformation. This finding is consistent with previous studies showing that digital transformation can increase the competitiveness of SMEs by expanding market access and increasing interaction with customers (Vial & Baudoin, 2019; Matt & Rauch, 2020). In the Indonesian context, where SMEs often face limited access to markets and resources, digital transformation offers an effective solution to overcome these challenges.

Business incubation has also been shown to have a positive and significant impact on SME business performance. Business incubation programs that include training, mentoring, and access to business networks help SMEs develop innovation capacity, marketing strategies, and financial management which in turn have a positive impact on their business performance. Participation in a business incubation program provides the necessary support for SMEs to adapt to market and technological changes, and improve their ability to face increasingly fierce competition. These results are in line with research by Bergek and Norrman (2008), which states that business incubation can reduce business failure rates by providing the right support at the early stages of business development. Another interesting finding from this study is the strong synergy between digital transformation and business incubation in improving SME performance. SMEs that combine digital transformation with participation in a business incubation program show better performance compared to SMEs that only focus on one aspect. This synergy can be explained by the dynamic capability theory Teece et al. (1997) which states that companies that can integrate internal capabilities (in this case digital transformation) with external resources (business incubation) will have a stronger competitive advantage. In practice, business incubation can help SMEs optimize the use of digital technology by providing the right direction and support so that digital transformation can be carried out more effectively and efficiently.

The findings of this study highlight several important managerial implications. First, digital transformation is essential for SMEs and should be integrated into their core business strategies to enhance efficiency, foster innovation, and maintain competitiveness. To support this, the government and related institutions need to play an active role by offering training, access to digital tools, and other resources that facilitate technology adoption. Second, business incubation plays a critical role in helping SMEs navigate the challenges of the digital era. Therefore, incubation programs must be expanded and improved to provide more comprehensive and tailored support. These programs can significantly contribute to the growth and sustainability of SMEs in increasingly competitive markets. Lastly, collaboration is key to maximizing the benefits of both digital transformation and business incubation. A synergistic approach involving SMEs, government bodies, incubation service providers, and the private sector is necessary to build a strong ecosystem that fosters the development of innovative, technology-based SMEs.

CONCLUSION

This study finds that both digital transformation and participation in business incubation programs significantly improve the performance of small and medium enterprises (SMEs). The integration of these two strategies enhances operational efficiency, innovation capacity, and competitiveness. A key finding is the strong synergy

between internal digital adoption and external support mechanisms. SMEs that implement both approaches simultaneously tend to achieve better performance outcomes than those that adopt only one, underscoring the importance of a dual strategy in facing dynamic market challenges. From a practical perspective, these results highlight the need for policymakers to prioritize digital transformation in SME development agendas. This involves not only improving access to digital tools but also offering training in digital literacy and strategic technology use. Additionally, incubation programs must be modernized to align with digital era demands by incorporating relevant curricula, qualified mentors, and stronger business networks. A multi-stakeholder collaboration involving the government, private sector, financial institutions, and academia is also essential to foster a robust SME ecosystem.

Theoretically, this research contributes to the growing body of knowledge on SME development by emphasizing the combined role of internal capabilities (technology adoption) and external enablers (incubation support) in enhancing firm performance and sustainability. However, this study is limited by its focus on a specific SME context and may not capture sectoral or regional variations. Future research could employ longitudinal or comparative designs across different industries or countries to better understand contextual factors. Future studies are also encouraged to explore other moderating variables, such as digital maturity or organizational culture, to gain deeper insight into the mechanisms that link digital transformation, incubation, and SME success.

REFERENCES

- [1] Alawi, M., Rashid, N., Al-Shami, S. A., & Al-Lamy, H. A. (2018). The determinants of E-commerce quality on small business performance in Iraq case study from ceramic industry. *Journal of Advanced Research in Dynamical and Control Systems*, 10(2), 70-74.
- [2] Ausat, A. M. A., Astuti, E. S., & Wilopo. (2022). Analysis Of Factors That Influence On E-Commerce Adoption And Their Impacts For Sme Performance In Subang District. *Jurnal Teknologi Informasi Dan Ilmu Komputer (JTIK)*, 9(2), 30-45.
- [3] Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 121-131.
- [4] Bergek, A., & Norrman, C. (2008). Incubator best practice: A framework. *Technovation*, 28(1-2), 20-28.
- [5] Chibelushi, C., & Costello, P. (2009). Challenges facing W. Midlands ICT-oriented SMEs. *Journal of Small Business and Enterprise Development*, 16(2), 202-220.
- [6] Chiu, W., & Cho, H. (2019). E-commerce brand: The effect of perceived brand leadership on consumers' satisfaction and repurchase intention on e-commerce websites. *Asia Pacific Journal of Marketing and Logistics*, 33(6), 333-343.
- [7] Esses, D., Csete, M. S., & Németh, B. (2021). Sustainability and digital transformation in the visegrad group of central european countries. *Sustainability (Switzerland)*, 13(11), 151-162.
- [8] Ghozali, I. (2017). *Aplikasi analisis multivariate dengan program IBM SPSS 23. [Multivariate analysis application with the IBM SPSS 23 program]*. Semarang: Badan Penerbit Universitas Diponegoro(2016).[in Bahasa Indonesia]. R/PPM/2017 dated May 22nd.
- [9] Hackett, S. M., & Dilts, D. M. (2004). A Systematic Review of Business Incubation Research. *The Journal of Technology Transfer*, 29(1), 152-163.
- [10] Hamdi, K., Yadewani, D., & Wijaya, R. (2021). Media Sosial Instagram Dalam Mendukung Promosi Usaha Sebagai Sebuah Pilihan Atau Paksaan. *Jurnal Pustaka Mitra (Pusat Akses Kajian Mengabdikan Masyarakat)*, 1(2), 41-56.
- [11] Hess, T., Benlian, A., Matt, C., & Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive*, 15(2), 345-355.
- [12] Johnson, H., Roberts, O., & Wilson, G. (2024). Exploring the Economic Resilience of Small and Medium Enterprises (SMEs) During Financial Crises. *Jurnal...*, 6(2), 32-42.
- [13] Kowrdziej, R., Parka, J., Krupka, J., Olifierczuk, M., Nowinowski-Kruszelnicki, E., Jaroszewicz, L., & Chojnowska, O. (2013). Dielectric properties of highly anisotropic nematic liquid crystals for tunable microwave components. *Applied Physics Letters*, 103(17), 151-177.
- [14] Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2019). Digital entrepreneurship: A research agenda on new business models for the twenty-first century. *International Journal of Entrepreneurial Behavior & Research*, 25(2), 353-375.

- [15] Liu, D. Y., Chen, S. W., & Chou, T. C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision*, 49(10), 171-181.
- [16] Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering*, 57, 339-343.
- [17] Matt, D. T., & Rauch, E. (2020). SME 4.0: The role of small-and medium-sized enterprises in the digital transformation. In *Industry 4.0 for SMEs: Challenges, opportunities and requirements* (pp. 3-36). Cham: Springer International Publishing.
- [18] Mrugalska, B., & Ahmed, J. (2021). Organizational agility in industry 4.0: A systematic literature review. *Sustainability (Switzerland)*, 13(15), 12-25.
- [19] Mulyadi, M. (2011). Penelitian kuantitatif dan kualitatif serta pemikiran dasar menggabungkannya. *Jurnal studi komunikasi dan media*, 15(1), 128-137.
- [20] Napitu, U., Corry, Sinurat, A., Harianja, T., Ease Arent, Mardiani, Nasution, A. M., & Napitu, H. (2023). Sosialisasi Peran Perguruan Tinggi Dan Akademisi Sebagai Inkubator Bisnis Dalam Penguatan Koperasi Sebagai Lembaga Ekonomi Kerakyatan Menuju Koperasi Modern Bagi Pelaku Ukm Di Sumatera Utara. *Jurnal Pengabdian Masyarakat Sapangambe Manoktok Hitei*, 2(1), 132-143.
- [21] Nazaruddin, I., Utami, E. R., & Rahmawati, E. (2024). Digitalization Challenges for SMEs: A Systematic Literature Review Perspective and Future Research. *JBTI: Jurnal Bisnis: Teori Dan Implementasi*, 15(1), 15-43.
- [22] Opland, L. E., Pappas, I. O., Engesmo, J., & Jaccheri, L. (2022). Employee-driven digital innovation: A systematic review and a research agenda. *Journal of Business Research*, 143-145.
- [23] Phan, P. H., Siegel, D. S., & Wright, M. (2005). Science parks and incubators: Observations, synthesis and future research. *Journal of Business Venturing*, 20(2), 514-524.
- [24] Plekhanov, D., Franke, H., & Netland, T. H. (2023). Digital transformation: A review and research agenda. *European Management Journal*, 41(6), 414-424.
- [25] Prasanna, R. P. I. R., Jayasundara, J. M. S. B., Naradda Gamage, S. K., Ekanayake, E. M. S., Rajapakshe, P. S. K., & Abeyrathne, G. A. K. N. J. (2019). Sustainability of SMEs in the competition: A systemic review on technological challenges and SME performance. *Journal of Open Innovation: Technology, Market, and Complexity*, 5(4), 100.
- [26] Ridhovan, A. R., & Anggarani, A. (2024). Innovative Strategies of Change Management in the Indonesian Banking Industry in an Election Year. *Jurnal Ilmiah Manajemen Kesatuan*, 12(5), 1899-1906.
- [27] Rodrigues, R. I., Lopes, P., & Varela, M. (2021). Factors affecting impulse buying behavior of consumers. *Frontiers in Psychology*, 12(4), 478-482.
- [28] Sari, M., Rachman, H., Juli Astuti, N., Win Afgani, M., & Abdullah Siroj, R. (2022). Explanatory Survey dalam Metode Penelitian Deskriptif Kuantitatif. *Jurnal Pendidikan Sains Dan Komputer*, 3(01) 87-99.
- [29] Sekaran, U. (2016). *Research methods for business: A skill building approach*. New York: John Wiley & Sons.
- [30] Soni, G., Kumar, S., Mahto, R. V., Mangla, S. K., Mittal, M. L., & Lim, W. M. (2022). A decision-making framework for Industry 4.0 technology implementation: The case of FinTech and sustainable supply chain finance for SMEs. *Technological Forecasting and Social Change*, 4(2), 180-187.
- [31] Stephens, S., & Miller, K. (2022). Business incubation as a community of practice: an emergent cultural web. *Entrepreneurship & Regional Development*, 34(9-10), 890-910.
- [32] Sugiyono, P. D. (2018). Quantitative, qualitative, and combination research methods (Mixed methods). *Bandung: Alfabeta CV*.
- [33] Surya, B., Menne, F., Sabhan, H., Suriani, S., Abubakar, H., & Idris, M. (2021). Economic growth, increasing productivity of smes, and open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 151-165.
- [34] Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 121-134.
- [35] Vial, S. (2019). *Being and the screen: How the digital changes perception. Published in one volume with a short treatise on design*. Massachusetts: MIT Press.
- [36] Westerman, G., Bonnet, D., & McAfee, A. (2014). *Leading digital: Turning technology into business transformation*. Massachusetts: Harvard Business Press.
- [37] White, H. C. (2008). *Identity and control: How social formations emerge*. New Jersey: Princeton university press.
- [38] Widagdo, S., Ratnasari, E., & Mandala, S. (2019). Internal Factor Analysis In Management Control System Design With Organizational Objectives As Intervening Variables In Blood Transfusion Unitpmi Jember. *Sinergi: Jurnal Ilmiah Ilmu Manajemen*, 9(2), 189-201.
- [39] Van Scheers, L. (2016). SMEs and social media opportunities: An organizational outlook. *Corporate Ownership & Control*, 13(4), 640-648.
- [40] Yusuf, M., 'Ardhuha, J., & Hikmawati, H. (2022). Pengembangan Perangkat Pembelajaran Model Problem Based Learning untuk Meningkatkan Pemahaman Konsep Fisika dan Kemampuan Berpikir Kritis Peserta Didik. *Jurnal Ilmiah Profesi Pendidikan*, 7(2), 177-188.

- [41] Zhou, H., & Zondo, R. W. D. (2023). The Role Of Business Incubation Programmes On The Performance Of Small And Medium Enterprises In South Africa. The Seybold Report, 18(5), 444-458.

