

Economic and Financial Digitalization on the Financial Performance of MSMEs in the Post-COVID-19 Era (A Case Study in Sumatra and Java Islands)

Lucky Satria Pratama ⁽¹⁾, Nasrullah Hidayat ⁽²⁾, Rossy Pratiwi Sihombing ⁽³⁾, Hartato Rianto ⁽⁴⁾, Shintami Oktavia ⁽⁵⁾

{ luckysatriapratama27@gmail.com¹, nasrullah@unimed.ac.id², rossypratiwy31@unimed.ac.id³, hartato@unimed.ac.id⁴, shintami23@unimed.ac.id⁵}

^{1,2,3,4,5} Faculty of Economics, State University of Medan, Indonesia

Abstract. This study aims to analyze the impact of economic and financial digitalization on the financial performance of MSMEs, with a focus on provinces in Sumatra and Java Islands. A quantitative approach is employed using the Partial Least Square–Structural Equation Modeling (PLS-SEM) method. The research model tests the direct effects of input variables, output variables, and support variables on MSME financial performance. Data were obtained from secondary sources provided by relevant institutions. The results of the outer model analysis indicate that all indicators are valid and reliable, with loading factor values exceeding 0.7 and composite reliability values above 0.7. The inner model shows that the output variable has a significant influence on MSME financial performance, whereas the input and support variables do not demonstrate significant effects. The R-squared value of 0.712 for MSME financial performance indicates strong predictive capability of the model. These findings suggest the existence of a digital mismatch between the availability of resources and institutional support and the effective adoption of digital technology in MSME operations. The insignificance of the input and support variables implies that the presence of infrastructure and resources alone is not sufficient to drive digital transformation, unless accompanied by proper utilization and alignment with the specific needs of MSME actors. Low levels of digital literacy, unequal distribution of technology, and weak policy interventions at the local level are potential factors explaining this anomaly.

Keywords: Economic Digitalization; MSME Financial Performance; Input and Support Variables; Digital Transformation; Digital Literacy

1. Introduction

Micro, Small, and Medium (MSMEs) have a vital role in the Indonesian economy, especially as a support for employment and a source of national economic growth. However, the COVID-19 pandemic has caused a major shock to the MSME sector, both in terms of demand, supply chain, and access to capital. Many business actors have experienced a significant decrease in income, and not a few have even been forced to stop their operations due to limited economic activities during the social restrictions period [2][3].

In the context of post-pandemic recovery, economic and financial digitalization has emerged as one of the adaptive strategies that is believed to be able to strengthen the resilience of MSMEs. Changes in consumer behavior that are increasingly accustomed to digital transactions opens up new opportunities for MSMEs to expand the market, increase efficiency, and improve financial performance [9][10]. A number of studies also confirm that digital transformation has a positive impact on the sustainability of MSMEs, both in terms of marketing, financial literacy, and access to alternative financing such as fintech [11][12][13].

Based on the **2023 East Ventures Digital Competitiveness Index (DCI)** report, there is a digital competitiveness gap between provinces in Indonesia. Provinces on the island of Java dominate the top ranking, while provinces on the island of Sumatra are generally in the middle position [4]. This condition shows a potential *digital mismatch* between the availability of resources and institutional support and the effectiveness of the use of digital technology by MSMEs. This phenomenon is in line with the findings of several previous studies that highlighted low digital literacy, limited infrastructure, and weak policy interventions as the main obstacles in the implementation of MSME digitalization [5][13][14][15].

Departing from this phenomenon, this study focuses on analyzing the influence of economic and financial digitalization on the financial performance of MSMEs after the COVID-19 pandemic with case studies on the islands of Sumatra and Java. The research was conducted using the **Partial Least Square–Structural Equation Modeling (PLS-SEM)** approach to test the relationship between input, output, and supporting variables on the financial performance of MSMEs. Thus, this study is expected to provide an empirical picture of the extent to which digitalization plays a role in improving the performance of MSMEs and identify the main challenges that need to be overcome to encourage more equitable digital economic growth in Indonesia [7][16][19].

2. Literature Review

2.1 Theoretical Foundations

Economic and financial digitalization has become the main focus in various studies on the resilience of MSMEs in the post-pandemic era. MSMEs are defined as productive economic businesses owned by individuals and small business entities, with classification based on turnover, assets, and number of workers [8].

The concept of the **Digital Competitiveness Index (DCI)** emphasizes three main dimensions, namely inputs, outputs, and supports. Inputs include aspects of human resources, mastery of information technology, and expenditure on ICT. Outputs include the contribution of the

economy, entrepreneurship, and labor productivity. Meanwhile, the support consists of infrastructure, financial access, as well as regulations and local government capacity [9]. With this framework, digital competitiveness between regions can be measured comprehensively and compared.

A number of studies confirm that digitalization has a positive impact on the performance of MSMEs. Siregar and Satriawan (2022) found that the use of ICT infrastructure has an effect on the credit performance of MSMEs in the banking sector, although there is a negative influence on fintech lending [9]. Octavina and Rita (2021) through a *systematic literature review* concluded that digital transformation contributes significantly to the resilience of MSMEs after the crisis [10]. On the other hand, Purnamasari and Asharie (2024) show that digitalization has not had a significant effect on financial performance, while financial literacy actually plays an important role [13].

In addition, the adoption of digital technology is also related to social media-based marketing and e-commerce. Octavina and Rita (2021) found that digital marketing was able to expand the reach of the MSME market during the pandemic [10]. Adequate telecommunication infrastructure has been proven to encourage digital transaction activities, both in payments, marketing, and financial recording [11]. However, low digital literacy and limited access to technology are still the main obstacles that cause the phenomenon of *digital mismatch* [5][14][15].

The role of **financial technology (fintech)** is increasingly prominent in the MSME ecosystem. Fintech provides a more flexible non-bank funding alternative, although the risk of high interest rates and *defaults* remains a challenge [12][14]. Therefore, proper regulation and collaboration between the government, fintech providers, and MSMEs are key in ensuring the sustainability of MSME digitalization [15].

By referring to these findings, this study places economic and financial digitalization as strategic variables tested through the **Partial Least Square–Structural Equation Modeling (PLS-SEM) model**. This approach is expected to be able to explain the relationship between inputs, outputs, and supporting factors for digitalization and the financial performance of MSMEs, as well as identify digital gaps between regions [16][18][19].

2.2 Conceptual framework

The problem solving of this research uses descriptive quantitative research and *explanatory research* approaches, data used secondary data focused on 2023. The analysis method used is *Ordinary Least Square* (OLS) analysis to see the influence between two variables. To overcome this problem, it is necessary to make efforts to integrate all related variables in it. For more details, the framework of the research is as follows

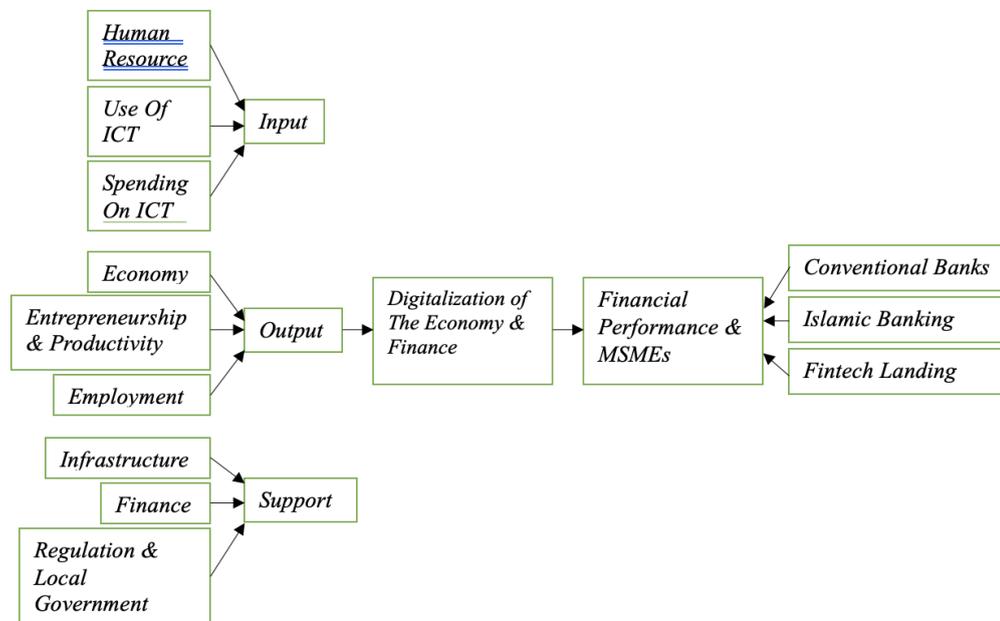


Figure 1. Conceptual Framework

3. Method

3.1 Types and Design of Research

This study uses a **quantitative** approach with an explanatory design. The goal is to test the causal relationship between input, output, and digitalization support variables on the financial performance of MSMEs after the COVID-19 pandemic. In addition, a descriptive approach is also used to describe the conditions of the implementation of economic digitalization in various provinces based on **the Digital Competitiveness Index (DCI)** indicator [9][16].

3.2 Research Location and Time

The research was conducted in provinces on the islands of Sumatra and Java, with a time span of 2020–2023. Research data was obtained from official publications, including the East Ventures DCI 2023 report and financial data from the Financial Services Authority (OJK) [4][11].

3.3 Population and Sample

The study population covers all provinces on the island of Sumatra and Java. The sampling technique was carried out by **judgement sampling** or **purposive sampling**, focusing on 10 provinces in Sumatra (Aceh, North Sumatra, Riau, Riau Islands, West Sumatra, Jambi, South Sumatra, Bengkulu, Bangka Belitung Islands, and Lampung) as well as 6 provinces in Java (Banten, DKI Jakarta, West Java, Central Java, DI Yogyakarta, and East Java) [17].

3.4 Data Types and Data Collection Techniques

The type of data used is **secondary data** in the form of *time series data* for four years (2020–2023). Data were obtained through library research, documentation from government reports, academic publications, and official data from financial institutions [16][18].

3.5 Research Variables

The research variables consist of:

- **Inputs (X1):** human resources, use of information technology, and expenditure on ICT.
- **Outputs (X2):** economy, entrepreneurship and productivity, and employment.
- **Supporting (X3):** infrastructure, financial access, and local government regulations and capacity.
- **Financial Performance of MSMEs (Y):** performance of conventional banks, Islamic banks, and fintech lending [9][11].

3.6 Data Analysis Techniques

The analysis method uses **variance-based** Structural Equation Modeling (SEM) with **the Partial Least Square (PLS-SEM) technique**. This analysis is carried out through two stages:

1. **Evaluation of the outer model** to test convergent validity, discriminant validity, and construct reliability [18].
2. **Internal model evaluation** to test the determination coefficient (R^2), *goodness of fit*, and research hypothesis through *bootstrapping*.

The PLS-SEM approach was chosen because it is suitable for testing models with reflective and formative indicators, and is able to estimate causal relationships with a relatively limited number of samples [19].

4. Results and Discussion

4.1. Evaluation of Measurement Models

External model **testing** showed that all indicators met the convergent validity criteria with a loading factor value above 0.7 (Table 1). This indicates that each indicator is able to represent a well-measured construct.

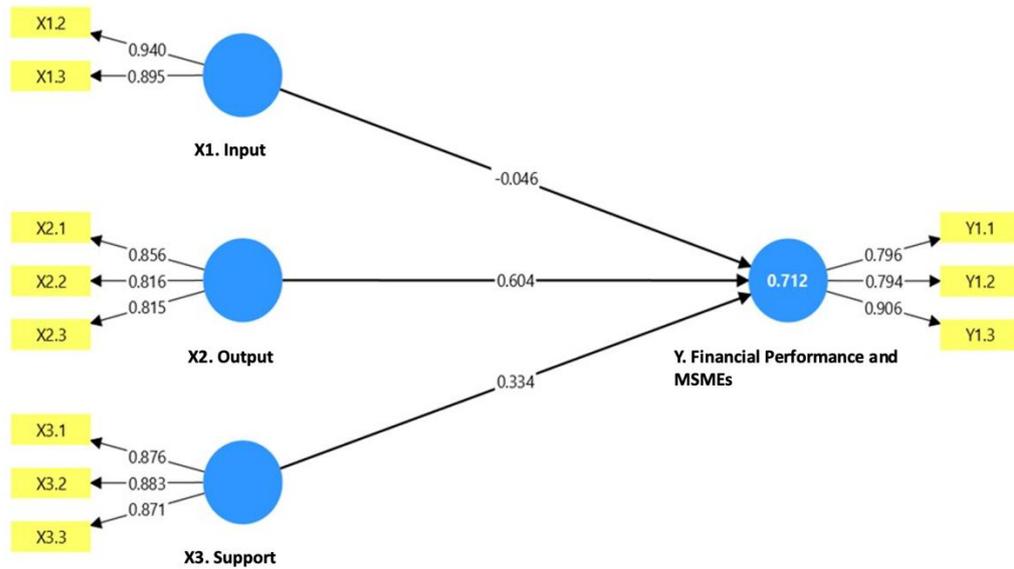


Figure 1. Research Model in Smart-PLS

4.1.1 Outer Model Testing

A. Convergent Validity

Convergent Validity is performed by looking at the item reliability indicated by the loading factor value which shows the correlation between a question item and the constraint indicator that measures the constraint indicator. The convergent validity in this study was tested through the loading factor value using the Smart-PLS 4.0 application, with the reference that an indicator is declared valid if it has a loading factor value above 0.7..

Table 1. Results of the Second Literacy Model Convergent Validity

Indicators	Outer loadings	Information
X1.2 <- X1. Input	0.940	Meet
X1.3 <- X1. Input	0.895	Meet
X2.1 <- X2. Output	0.856	Meet
X2.2 <- X2. Output	0.816	Meet
X2.3 <- X2. Output	0.815	Meet
X3.1 <- X3. Support	0.876	Meet
X3.2 <- X3. Support	0.883	Meet
X3.3 <- X3. Support	0.871	Meet
Y1.1 <- Y. Financial Performance & MSMEs	0.796	Meet
Y1.2 <- Y. Financial Performance & MSMEs	0.794	Meet

Y1.3 <- Y. Financial Performance & MSMEs	0.906	Meet
--	-------	------

Model testing using **Partial Least Square–Structural Equation Modeling (PLS-SEM)** was conducted to analyze the relationship between research variables. The evaluation of the **outer model** showed that the majority of valid indicators with a *loading factor* value of > 0.7 , except for one indicator in the Input variable that was eliminated [18]. The results of the reliability test also show that all constructs have a *composite reliability* value > 0.7 , so they are declared reliable.

B. Construct Reliability And Validity

The next evaluation is to compare the root value of AVE (*Aggregate Variance Extracted*) with the correlation between constraints where the root value of AVE must be higher than the correlation between constraints (Yamin at al. 2011). The literacy model will have *better discriminant validity* if the square root of AVE for each constructor is greater than the correlation between the two constructors in the model. A good AVE value has a value greater than 0.5. [14]

Table 2. AVE Value Results

Variable	Extracted variance (AVE)
X1. Input	0.842
X2. Output	0.688
X3. Support	0.768
Y. Financial Performance & MSMEs	0.695

All dimensional variables have an AVE value greater than 0.50 which means that the magnitude of variation of each measurement indicator item is contained by the variable itself, overall the AVE value of all variables is ≥ 0.50 (*convergent validity* of the accepted variable). Then *the discriminant validity* for all variables is met, the overall *evaluation of discriminant validity* is fulfilled and the next test is continued.

C. Internal Consistency And Composite Reliability

Internal Consistency Reliability measures how capable an indicator is of measuring its latent constructs. (Memon et al., 2017). The tool used to assess this is *Cronbach's alpha*. *Cronbach's alpha value* of 0.6-0.7 is considered to have good reliability. Meanwhile, the outer model, in addition to being measured by assessing *convergent validity* and *discriminant validity*, can also be done by looking at the reliability of constraints or latent variables measured by *composite reliability* values. Construct is declared reliable if the composite reliability has a value greater than 0.7. [22]

Table 3. Value Results *Internal Consistency And Composite Reliability*

Variable	Cronbach's alpha	Information
X1. Input	0.815	Meet
X2. Output	0.773	Meet

X3. Support	0.849	Meet
Y. Financial Performance & MSMEs	0.780	Meet
Variable	Composite Reliability	Information
X1. Input	0.856	Meet
X2. Output	0.777	Meet
X3. Support	0.853	Meet
Y. Financial Performance & MSMEs	0.809	Meet

Based on the table above, it can be seen that all construct variables have a *Cronbach's alpha* value greater than 0.6, namely the Input, Output, Support and Financial Performance variables and MSMEs have a Cronbach's alpha value > 0.6 , so it can be said that all of these dimensional variables have been reliable. Furthermore, *the composite reliability* value in the table above shows that all construct variables have a value above 0.7 so that all latent variables meet the criteria of good reliability.

4.1.2. Inner Model Testing

A. Analysis of Variance (R-Square)

The results of **the R-square analysis** showed that the Input, Output, and Supporting variables were able to explain the variation in **the financial performance of MSMEs** by **71.2%**, while the remaining 28.8% was influenced by other factors outside the research model. The R-square value of 0.712 is included in the **strong** category (moderate to substantial), so the model can be said to have good predictive power [19]. This means that although there are still other external factors such as macroeconomic conditions, fiscal policy, or changes in consumer behavior that also influence, the model used in this study is quite capable of illustrating the relationship between economic and financial digitalization and the performance of MSMEs. Thus, it can be concluded that the combination of Input, Output, and Supporting aspects of digitalization has an important role in explaining the variation in the financial performance of MSMEs on the islands of Sumatra and Java, even though the contribution is uneven in each dimension.

B. F-Square Analysis

The results of **the F-square analysis** show that there is a variation in the amount of influence between variables on the financial performance of MSMEs. The **Output** variable has an *effect size* value of **0.352**, which is a **large category**, so it can be concluded that the implementation of digitalization results such as increasing productivity, entrepreneurship, and regional economic contribution has a very strong influence on the financial performance of MSMEs. Meanwhile, the **supporting** variable has an F-square value of **0.131**, which is in the **medium category**, indicating that the existence of infrastructure, financial access, and local government regulations play a fairly important but not optimal role in encouraging the performance of MSMEs. In contrast, the **Input** variable shows a very small F-square value of 0.002, so it can be ignored. This indicates that the existence of human resources, the use of ICT, and expenditure on information technology do not necessarily have a significant impact if they are not accompanied by effective use [19]. These findings underscore the phenomenon of *digital mismatch*, where the availability of digital resources does not automatically improve the performance of MSMEs without implementation that is relevant to business needs.

C. Hypothesis Testing

Hypothesis testing was carried out based on the results of the internal test of the Model which included *r-square output*, parameter coefficients and t-statistics. To see whether a hypothesis is acceptable or not, among other things, by paying attention to the significance values between contracts, t-statistics and p-values. The hypothesis test of this study is seen from the results of *bootstrapping* with a statistical t-value ratio must be greater than 1.96 with a significance level of p-value of 5% and a beta coefficient of positive value.

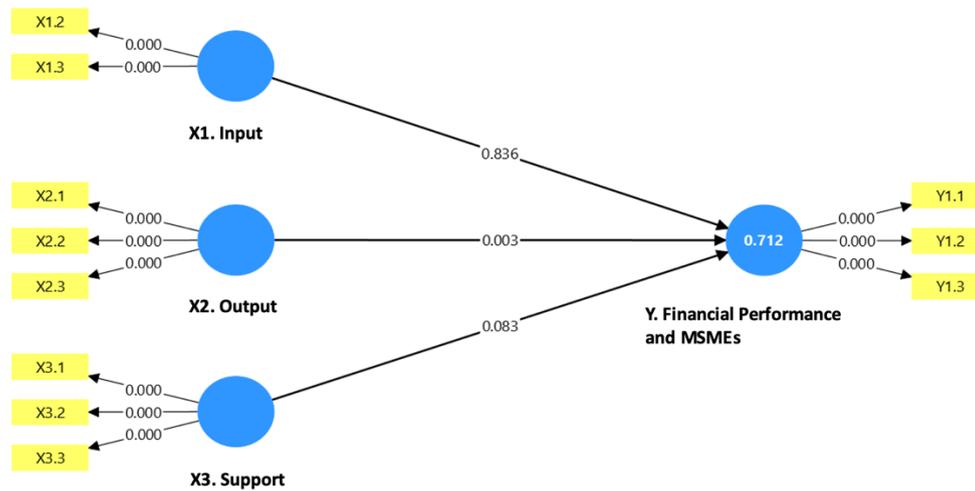


Figure 2. Bootstrapping Value Results

Based on the figure, it shows that all variables consisting of Input and Supporting have *p-values* greater than 0.05 and Output less than 0.05 for Financial Performance and MSME variables.

Table 3. Hypothetical Results

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
X1. Input -> Y. Financial Performance & MSMEs	-0.046	-0.043	0.233	0.207	0.836
X2. Output -> Y. Financial Performance & MSMEs	0.604	0.603	0.205	2.942	0.003
X3. Support -> Y. Financial Performance & MSMEs	0.334	0.341	0.193	1.731	0.083

The first hypothesis to the third hypothesis test whether each of the Input, Output and Supporting variables has an effect and positive impact on the Financial Performance & MSME variables as follows:

- Testing whether the Input variable positively affects the Financial Performance & MSME variable, it shows that there is a negative and insignificant influence shown by the value of the Input beta coefficient of -0.046 and the t-statistic of 0.207 so that it has a *p-value* of 0.836 which is greater than the alpha value of 5%.
- Testing whether the Output variable positively affects the Financial Performance & MSME variable, it shows that there is a positive and significant influence shown by the value of the Output beta coefficient of 0.604 and the t-statistic of 2.942 so that it has a *p-value* of 0.003 which is smaller than the alpha value of 5%.
- Testing whether the Supporting variable positively affects the Financial Performance & MSME variable, it shows that there is a positive and insignificant influence shown by the value of the Supporting beta coefficient of 0.334 and the t-statistic of 1.731 so that it has a *p-values* of 0.083 which is greater than the alpha value of 5%.

4.1.3. Research Model Analysis

A. Direct Effects

In PLS SEM analysis, direct effects are called path coefficients. Path coefficients are measured between constructs to see the significance and strength of the relationship and to test hypotheses. The value of path coefficients ranges from -1 to 1. The closer it is to 1, the stronger the relationship between the constructs; the closer it is to -1, the more negative it is (Sarstedt et al. 2020) [23]. The results of the direct effects of this research literacy model are as follows:

Table 4. Direct Effects Value Results

	Y. Placement of Employees
X1. Input	-0.046
X2. Output	0.604
X3. Support	0.334

- The direct effect of the Input variable on the Financial Performance & MSME variable is -0.046 which indicates that when the Input variable increases by 10%, it will decrease the Financial Performance & MSME variable by -0.46%.
- The direct influence of the Output variable on the Financial Performance & MSME variable is 0.604 which indicates that when the Output variable increases by 10%, it will increase the Financial & MSME Performance variable by 6.04%.
- The direct influence of the Supporting variable on the Financial Performance & MSME variable is 0.334 which indicates that when the Supporting variable increases by 10%, it will increase the Financial Performance & MSME variable by 3.34%.

The results above show that all the Input, Output and Supporting variables have a direct influence on each of their variables.

4.2. Discussion

The results of data processing using **PLS-SEM** showed that the Output variable had a positive and significant effect on the financial performance of MSMEs, with a coefficient of 0.604 and a *t-statistical value* of 2.942 ($p < 0.05$). This means that the higher the achievement of productivity, entrepreneurship, and economic contribution supported by digitalization, the greater the increase in the financial performance of MSMEs. These findings reinforce the view that digital transformation that is implemented in real terms in MSME business operations, such as digital marketing, the use of e-commerce, and technology-based production management, is able to drive revenue growth and strengthen financial access [9][10].

On the other hand, the input variable consisting of human resources, the use of information technology, and expenditure on ICT, showed a negative and insignificant influence on the performance of MSMEs, with a coefficient value of -0.046. This indicates the existence of a *digital mismatch* phenomenon, which is a mismatch between the availability of resources and their use in business activities. Although human resource support and digital investment are available, the low digital literacy among MSME actors and the limited skills in utilizing technology make the potential for digitalization not fully realized [5][13].

Meanwhile, the supporting variables, which include infrastructure, financial access, and regional regulatory capacity, have a positive coefficient of 0.334 but are not statistically significant. This indicates that the existence of infrastructure and regulations is not strong enough to improve the financial performance of MSMEs if it is not accompanied by targeted implementation. Previous studies have also confirmed that although supporting facilities are available, obstacles in the form of limited digital literacy, uneven infrastructure, and weak policy interventions are still challenges in the implementation of MSME digitalization [5][14][15].

Overall, the results of this study indicate that the success of MSME digitalization is more determined by the **actual output produced** than simply the availability of external inputs or support. In other words, digitalization only has a real impact when it is truly translated into productive business activities that are relevant to the needs of MSME actors. This makes an important contribution to the literature, as well as a practical input that digitalization programs need to be directed not only at the provision of infrastructure and resources, but also at mentoring that ensures MSME actors are able to implement them effectively [10][19].

5. Conclusions and Suggestions

5.1 Conclusion

This study analyzes the influence of economic and financial digitalization on the financial performance of MSMEs after the COVID-19 pandemic on the islands of Sumatra and Java using the **PLS-SEM** approach. The results of the study show that:

1. **Input variables** (HR, ICT use, ICT expenditure) had a negative and insignificant effect on the financial performance of MSMEs ($\beta = -0.046$; $p > 0.05$). These findings confirm the existence of a *digital mismatch* between the availability of resources and the readiness of MSMEs to utilize them [5][13].

2. **Output variables** (economy, entrepreneurship, productivity) had a positive and significant effect ($\beta = 0.604$; $p < 0.05$). This shows that digital transformation that is truly implemented in business operations is able to increase the income and financial access of MSMEs [10][19].
3. **Supporting variables** (infrastructure, finance, regional regulations) had a positive but insignificant effect ($\beta = 0.334$; $p > 0.05$), which means that the existence of infrastructure and policies has not been fully effective without integration with the real needs of MSME actors [5][14][15].

Overall, digitalization has proven to be important for the sustainability of MSMEs, but its success is greatly influenced by the quality of implementation and suitability with local needs.

An important finding from this study is the emergence of the phenomenon of **digital mismatch**, which is a mismatch between the availability of digital resources (such as human resources, infrastructure, and policy support) and the ability of MSMEs to use them effectively. This explains why the Input and Support variables do not have a significant effect, while the Output variable is the main determining factor for the success of MSME digitalization. In other words, digitalization will only have a real impact on improving performance if it is truly implemented in productive economic activities that are in accordance with business needs.

5.2 Suggestions

Based on the results of the study, some suggestions that can be submitted are:

1. For Local Governments and Policymakers
It is necessary to prioritize increasing **the digital literacy** of MSMEs through training, mentoring, and inclusive programs based on local needs. In addition, the digital divide between regions must be addressed through data-driven affirmative policies.
2. For MSME Actors
MSMEs need to optimize technology adoption, not only limited to digital marketing, but also in **financial recording, inventory management, and the use of fintech services**. This is important so that MSMEs can maximize the benefits of digitalization while minimizing financing risks.
3. For Financial Institutions
Banks, fintechs, and cooperatives need to design digital financial products that are MSME-friendly, easily accessible, and equipped with education and consumer protection. Inclusive digital financial services will be a catalyst in strengthening the MSME ecosystem.
4. For Academics and Researchers
Further research can be conducted longitudinally to measure the long-term impact of digitalization on MSMEs, or with a **mixed-method approach** to explore the social, cultural, and psychological dimensions that affect the success of MSME digitalization.

Based on the findings of the study on the influence of economic and financial digitalization on the performance of MSMEs after the COVID-19 pandemic, there are several strategic recommendations that can be considered:

1. Strengthening MSME Digital Literacy

Local governments and universities need to develop training programs that are sustainable, based on the needs of the business sector, and easily accessible to MSME actors in various regions. Digital literacy is not only limited to the use of social media, but also includes digital financial record-keeping, inventory management, and the use of non-cash payment systems.

2. **Integration of Digitalization Policy with Regional Development**
Government regulations and initiatives need to be integrated with local economic development programs. This is important so that the digitalization policy is not only top-down, but also really answers the real needs of MSMEs at the grassroots level.
3. **Equitable Strengthening of Digital Infrastructure**
The inequality of internet access and technological infrastructure between Java and Sumatra must be overcome immediately. Equitable distribution of digital infrastructure will encourage MSMEs in the regions to have equal opportunities in utilizing technology, so that the digital competitiveness gap between regions can be minimized.
4. **Collaboration with Financial Institutions**
Banks, fintech, and cooperatives need to be actively involved in supporting the digital transformation of MSMEs. The financial products offered must be accompanied by education and consumer protection so that MSMEs are not trapped in high-risk financing schemes.
5. **Output-Oriented Implementation Approach**
The results of the study show that the Output variable is the main determinant of improving the performance of MSMEs. Therefore, every digitalization program must be oriented towards creating real added value, such as increasing productivity, business efficiency, and market expansion.
6. **Continuous Research and Monitoring**
Follow-up research with longitudinal and mixed-method approaches is needed to evaluate the long-term impact of MSME digitalization. Periodic monitoring is also important to assess the effectiveness of government programs and adjust interventions according to the dynamics of needs.

References

- [1] Trinugroho I, Pamungkas P, Wiwoho J, Damayanti SM, Pramono T. Adoption of digital technologies for micro and small business in Indonesia. *Financ Res Lett.* 2022;45.\
- [2] Hardilawati W Laura. MSME Survival Strategy in the Midst of the Covid-19 Pandemic. *Journal of Accounting and Economics.* 2020; 10(1).
- [3] Bartik A, Bertrand M, Cullen Z, Glaeser EL, Luca M, Stanton C. How are Small Businesses Adjusting to COVID-19? Early Evidence from a Survey. *SSRN Electronic Journal.* 2020;
- [4] East Ventures. justice for all Indonesian people. 2023.
- [5] Manan Y. Protection & Risk Management Integration System for Fintech Peer to Peer (P2P) Lending and Payment Gateway to Increase the Acceleration of MSME Growth 3.0. *Ihtifaz: Journal of Islamic Economics, Finance, and Banking.* 2019; 2(1).
- [6] Damodaran S, Kavin S, Keerthi KU, Madhumathi J, Mythili P V. Empowering MSMEs Through Digital Lending. In: *Proceedings of 2019 International Conference on*

- Digitization: Landscaping Artificial Intelligence, ICD 2019. 2019.
- [7] Ric Simes, Frank Farall, Claudia Law, Edy Wirawan, Wilson Wijaya. SMEs Trigger Indonesia's Progress An Instrument for Archipelago Growth. Australia: Deloitte Access Economics; 2015.
- [8] Law of the Republic of Indonesia. Law No. 20 on Micro, Small, and Medium Enterprises. 2008.
- [9] Sri Indriyani Siregar, Dodi Satriawan. Accelerating MSME Economic Recovery through Digital Transformation After the Covid-19 Pandemic on the Island of Sumatra. In: *Sumatranomics*. Terrain; 2022. pp. 1–35.
- [10] Octavina LA, Rita MR. Digitization of MSMEs, financial literacy, and financial performance: A study during the Covid-19 pandemic. *STIE Perbanas Press* 2021. 2021;11.
- [11] Calderón Cesar, Cantu Catalina. The Impact of Digital Infrastructure on African Development. World Bank Group Africa Region Office of the Chief Economist. 2021 Nov; 1–37.
- [12] Fajar M, Larasati CW. The Role of Financial Technology (Fintech) in the Development of MSMEs in Indonesia: Opportunities and Challenges. *Humanis (Humanities, Management and Science Proceedings)*. 2021; 1(2).
- [13] Endah Dewi Purnamasari, Asmawati Asharie. Digitalization of MSMEs, Financial Literacy on the Financial Performance of MSMEs in the New Normal Era of the Covid 19 Pandemic. *Journal of Sharia Economics & Economics*. 2024 Jan; 7(1):348–61.
- [14] N.Y., N.Y. The Effect of Fintech Implementation on The Performance of SMEs. *Journal of International Conference Proceedings*. 2021; 4(3).
- [15] Gendro Wiyono, Kusuma Chandra Kirana. The Effect of Fintech Impressions on the Financial Behavior of SMEs. *Scientific Journal of Management and Business*. 2020 Apr; 21(1):69–81.
- [16] Rahman, H. "Roadmap for Research and Community Service, Faculty of Economics, State University of Medan 2025-2039," Faculty of Economics, State University of Medan, Medan, Nov. 20, 2024.
- [17] Armin, R. N. "Roadmap of Research and Service of Economics Study Program", Faculty of Economics, State University of Medan, Medan, 2024.
- [18] Sugiyono. *Statistics for research*. 31st ed. Bandung: Alfabeta; 2021.
- [19] Sugiyono. *Quantitative, qualitative and R&D Research Methods*: Alfabeta; 2014.
- [20] Ghozali I. *Application of Multivariate Analysis with IBM SPSS Program 25*. Semarang: Publishing Agency of Diponegoro University. E-Jra. 2018; 11(11).
- [21] Ngwabebhoh FA, Saha N, Nguyen HT, Brodnjak UV, Saha T, Lengalova A, et al. Preparation and characterization of nonwoven fibrous biocomposites for footwear components. In: *Polymers*. 2020. pp. 1-18.
- [22] Memon, M. A., Ting, H., Cheah, J., Thurasamy, R., Chuah, F., & Cham, T. H. (2017). Sample Size for Survey Research: An Integrative Review on Current Practices and Procedures in Graduate Theses and Dissertations. *International Journal of Management and Applied Research*, 4(2), 119-136
- [23] Sarstedt, M., Ringle, C. M., & Hair, J. F. (2020). Partial least squares structural equation modeling. In *Handbook of market research* (pp. 1-40)