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Re-industrialization and Digital Finance: Synergy of Advanced Technology in Driving National Economic Growth in Indonesia

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Abstract

The development of advanced technology and financial digitalization has become a major factor in the reindustrialization process in various developed countries, such as the United States, Japan, and China. In Indonesia, this condition is studied to increase national economic competitiveness and encourage sustainable economic growth. This research aims to analyze the synergy between the process of reindustrialization and digital financial innovation in Indonesia, as well as its impact on national economic growth. Through quantitative methods and literature review, this study reveals that the application of technologies such as artificial intelligence, blockchain, and the Internet of Things (IoT) is able to strengthen digital financial infrastructure, improve the efficiency of financial services, and expand financial inclusion at all levels of society. In addition, the analysis highlights the importance of innovative policies and adaptive regulations in accelerating technology adoption while ensuring consumer protection and financial system stability. The results of the study show that the synergy between reindustrialization and digital finance can strengthen the national industrial sector, increase global competitiveness, and support inclusive and sustainable economic growth in Indonesia. Therefore, cross-sector collaboration, policy innovation, and the development of a conducive digital ecosystem are the main keys in utilizing the potential of advanced technology for national economic development.

Keywords: *Reindustrialization, Digital Financial Innovation, Advanced Technology, National Economic Growth, Policies and Regulations.*

Introduction

In the last decade, Indonesia has experienced an acceleration of digital transformation driven by advanced technological advances such as artificial intelligence (AI), blockchain, and the Internet of Things (IoT), [1]; [2]; [3]. This transformation not only affects the economic sector but also encourages the reindustrialization process aimed at increasing the competitiveness of the national industry in the midst of global competition, [4]. This phenomenon is in line with the Indonesian government's strategy in strengthening the innovation- and technology-based economy, as stated in the Making Indonesia 4.0 roadmap, [5]. Data from Bank Indonesia shows that the value of digital financial transactions in Indonesia has increased significantly from IDR 1.2 trillion in 2018 to IDR 4.5 trillion in 2023, with an annual growth rate of 35%, [6]. Chart 1 shows the growth trend of digital financial transactions over the past five years plus the estimated transactions in 2024.

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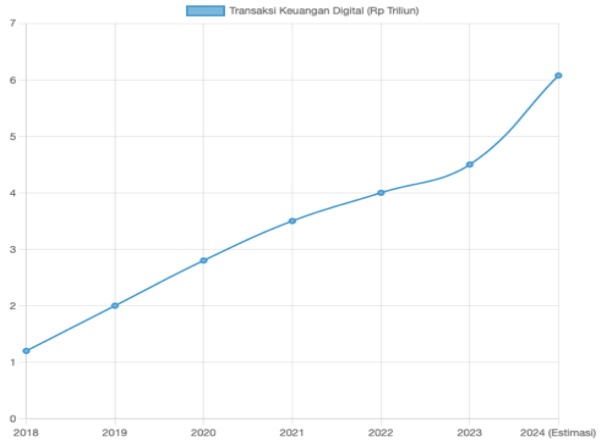

Graph 1. The Growth of Digital Financial Transactions in Indonesia Period (2018-2024)

Source: dataindonesia.id.

This visualization of the graph confirms that the adoption of digital financial technology in Indonesia is increasingly widespread, supported by factors such as increasing internet penetration, digital financial service innovation, and government policies that support the digital ecosystem, [7]. This upward curve indicates that digital finance is an integral part and a major pillar in national economic transformation, as well as has the potential to accelerate the process of re-industrialization and overall economic growth, [8]. In addition, this graph also provides an overview that future growth projections are very positive, confirming the importance of strengthening digital infrastructure and regulations to support the sustainability of this growth, [9]. This data also emphasizes the importance of developing technology and regulatory infrastructure that supports the sustainability of digital transaction growth in the future. The positive growth trend will continue, supported by factors such as increased internet penetration, digital financial services innovation, and government policies that support the digital ecosystem, [10]; [11].

In addition, data from the Central Statistics Agency (BPS) shows that the contribution of the processing industry sector to Indonesia's Gross Domestic Product (GDP) increased from a transaction value of IDR 1.2 trillion with a contribution of 19.5% in 2018 to IDR 2.339 trillion, or 21.8%, in 2022, and then the value of the transaction continued to increase significantly to reach IDR 4.5 trillion in 2023, [12]. Their report estimated transactions to reach 6.075 trillion in 2024. Thus, this trend is a key indicator in the analysis of the influence of technology and policies on the development of Indonesia's industrial sector and national economy, [12]. The following table data details the contribution of the processing industry to Indonesia's GDP for the period 2018 to 2024, which can be seen in Table 1 below.

Table 1. Contribution of the Processing Industry to Indonesia's GDP

Period (2018-2024)

Year	Transaction Value (Rp Trillion)	Contribution of the Processing Industry to GDP (%)
2018	1,2	19,5
2019	2,339	20,1
2020	2,639	20,4
2021	3,239	21,0
2022	4,039	21,8
2023	4,5	25,9
2024	6,075	35,0

Source: (BPS, 2023)

The above data shows that the integration of digital technology in the reindustrialization process has the potential to accelerate national economic growth through increased industrial efficiency and expanded access to digital financial services, [13]. Based on the metadata of research analysis that can be described through bibliometric graphs, it shows that there are several research topics regarding

reindustrialization with the use of advanced technologies such as artificial intelligence, blockchain, and IoT; innovative policies; and digital regulations that are connected to national economic growth, [14]. However, some literature also explains that digital financial innovations such as digital transactions (digital transactions, financial inclusion) can strengthen the reindustrialization process by encouraging national economic growth, [15]; [16]; [11].

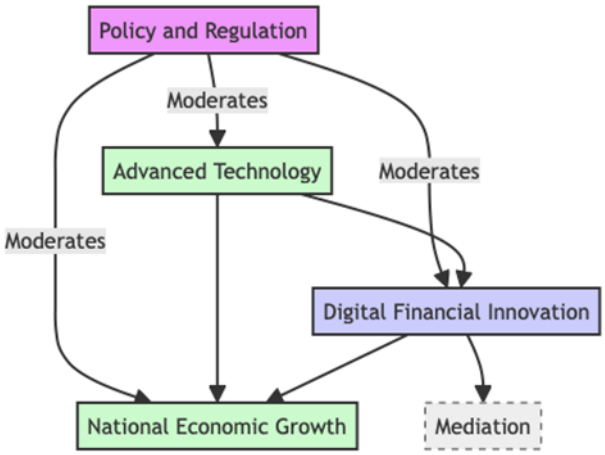

Figure 1. Road Map of Research Concept

The moderation effect of policy and regulation is crucial; it can either amplify or attenuate the impact of advanced technology on innovation and economic growth, [17]. This underscores the need for policymakers to craft flexible and forward-looking regulations that encourage innovation while mitigating risks. The role of digital financial innovation highlights that without effective financial innovation, the benefits of advanced technology may not fully materialize in economic growth, [18]; [19]. This points to the importance of nurturing fintech ecosystems and digital financial services as integral components of economic development strategies, [20]; [21]. The roadmap visually and conceptually integrates these relationships, providing a clear sequence for empirical investigation: first assessing the direct impacts, then exploring mediation effects, and finally analyzing moderation effects.

Although many studies have discussed the impact of digital technology on economic and industrial growth, there is still a lack of studies specifically on the synergy between the reindustrialization process and digital finance in Indonesia holistically, [22]. Most research focuses more on the technological or economic aspects separately, without paying attention to the interaction between the two. In addition, there has been no research that comprehensively examines the influence of policies and regulations on the acceleration of this process. Therefore, this study explains how the synergy of advanced technology and digital financial innovation can drive national economic growth through the reindustrialization process, [23]. This data provides an initial overview of the potential growth of digital financial transactions in Indonesia, which can be used as an indicator in analyzing the influence of technology and regulations on the process of reindustrialization and national economic growth, [24]. In addition, this projection also emphasizes the need to strengthen digital infrastructure and adaptive policies so that this growth can run in a sustainable and inclusive manner, [25].

Literature Review

Reindustrialization And National Economic Growth

In order to strengthen the analysis and interpretation of research results regarding the synergy between reindustrialization and digital finance in encouraging national economic growth, this research is based on several relevant theories and becomes a conceptual basis. Innovation and Technology Theory, which emphasizes that technological innovation is the main driver in the process of industrialization and economic growth, [26]. Schumpeter stated that innovation includes the adoption of new technologies that are capable of creating waves of change and driving production efficiency, productivity, and industrial competitiveness. Advanced technologies such as artificial intelligence, blockchain, and IoT are becoming major factors in the reindustrialization process driven by digital innovation, [27].

The Digital Financial Innovation And National Economic Growth

In addition, this research is also based on Digital Economy Theory, which emphasizes that digital transformation affects all aspects of the economy, from the production process to distribution to consumption, [28]. Brynjolfsson and McAfee stated that the digital economy creates new opportunities through digital platforms, big data, and automation that are able to improve financial efficiency and inclusion. In the Indonesian context, digital finance is the backbone in expanding access to financial services and supporting the reindustrialization process, [29]; [30].

The Advanced technology And National Economic Growth

Innovation Ecosystem Theory supports strengthening collaboration across sectors, including government, industry, and academia, in creating a conducive innovation ecosystem, [31]. Chesbrough stated that the success of innovation does not only depend on technology but also on an environment that supports adaptive collaboration and regulation, [32]. In this study, the success of the synergy between digital finance and re-industrialization is greatly influenced by policies and regulations that support innovation, [33].

Policies and Regulations On National Economic Growth

Economic growth must be sustainable and inclusive, taking into account social and environmental aspects, [34]. This is based on Sustainable Growth Theory. Solow stated that technological innovation and investment in human resources are the main factors in achieving long-term economic growth, [35]. In the Indonesian context, the development of digital finance and reindustrialization must be directed to achieve inclusive and sustainable growth, [36]; [37]. Davis (1989) developed the Technology Acceptance Model—TAM—which describes the factors that influence the adoption of technology by individuals and organizations. TAM states that the perception of ease of use and perceived benefits is the main determinant in the acceptance of new technologies, [38]; [39]. In this study, this theory is relevant to understanding the factors that affect the level of adoption of digital technology in the reindustrialization process in Indonesia, [40].

Based on the theoretical framework and research objectives, the hypotheses proposed in this study include H1, the positive and significant influence between the application of advanced technology on digital financial innovation in Indonesia. This hypothesis refers to the expected direct relationship between the use of advanced technologies such as artificial intelligence, blockchain, and IoT and the emergence of digital finance innovations, . Based on the theory of innovation and the digital economy, the adoption of innovative technology is believed to be able to encourage the development of digital-based financial services that are more efficient and inclusive. Meanwhile, H2 stated that digital financial innovation is not only the result of the application of advanced technology but also a mediator that strengthens the influence of this technology on national economic growth. In other words, the success of technology in increasing economic growth is highly dependent on the success of digital financial innovation as a connecting mechanism.

H3 assumes that the existence of supportive policies and regulations will strengthen the link between advanced technology, digital financial innovation, and economic growth. Policies that support innovation and digital infrastructure are believed to be able to increase the effectiveness of the influence of these variables.

Furthermore, H4 assumes the indirect influence of advanced technology on economic growth through digital financial innovation.

H5: Policies and regulations that support strengthening the influence of advanced technologies on digital financial innovation.

H6: Policies and regulations that support strengthening the influence of advanced technology on national economic growth.

H7: Policies and regulations that support strengthening the influence of digital financial innovation on national economic growth. Based on the above hypothesis, the framework of the research concept can be shown in the following Figure 2.

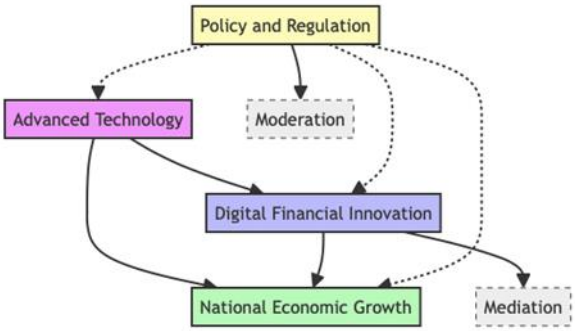

Figure 2. Research Concept Framework

Methodology

This study uses a quantitative approach with correlational and analytical research design. The quantitative approach was chosen because it aims to measure and analyze the relationship between the main variables, namely advanced technology, digital financial innovation, and national economic growth. Meanwhile, correlational design is used to determine the level and direction of the relationship between these variables statistically. The research focus is aimed at the rapidly growing industrial and digital finance sectors over the past six years (2018-2024). The population in this study includes all industry players, financial institutions, and government institutions related to the development of digital technology and reindustrialization in Indonesia. Specifically, the population includes the manufacturing industry that applies digital technology in the production process, banks and financial institutions that have provided digital financial services for at least the last 2 years, and government agencies related to policies and regulations in the field of technology and industry. Samples were taken by a purposive sampling method of predetermined population types and criteria. The number of samples taken was 150 respondents, consisting of 80 industrial companies, 50 digital financial institutions, and 20 related government agencies.

Data were collected through questionnaires organized based on indicators of key variables and mediator variables. In addition, secondary data is obtained from official reports from the government, central banks, and national statistics agencies (BPS). Data collection techniques are carried out online and offline as needed. The collected data will be analyzed using the Structural Equation Modeling (SEM) approach based on Partial Least Square (PLS) using SmartPLS software. This approach was chosen because it is able to test the causal relationships between variables simultaneously and is able to handle undistributed data and complex models. This analysis is used to determine the relationship and influence of independent variables on dependent variables, as well as test the significance of these relationships. Data were collected through questionnaires organized based on indicators of key variables and mediator variables. In addition, secondary data is obtained from official reports from the government, central banks, and national statistics agencies (BPS). Data collection techniques are carried out online and offline according to needs and situations. In addition, trend analysis and growth projections will be conducted for the 2018–2024 period to get a complete picture of the development and prediction of digital financial growth in Indonesia.

Results

Measurement Model

Descriptive analysis was carried out using basic statistical features in SmartPLS, including statistical calculation of frequency, mean, standard deviation, and data distribution for each variable indicator. The data used is an indicator score from a questionnaire that has been filled out by the respondents, which is then processed to get an overview of the characteristics of the data. The results of the descriptive test from the sample data can be seen in Table 2 below.

Table 2. Descriptive Test Results

Variable	Total of Respondents	Average	Standard Deviation	Minimum Score	Maximum Score
Advanced Technology	150	4,05	0,65	2,8	5,0

Digital Finance Innovation	150	3,98	0,70	2,5	5,0
National Economic Growth	150	4,10	0,60	3,0	5,0
Policies and Regulations	150	3,85	0,75	2,4	5,0

Source: SmartPLS data processing results

The results of the descriptive analysis showed that, in general, the average score of the variable indicators was above 4, which showed that respondents tended to give a positive assessment of these variables. A relatively small standard deviation value (between 0.60 to 0.75) indicates a fairly low level of data variability, so that the data distribution tends to be homogeneous and there are no significant extreme outliers. In addition, the minimum and maximum values showed that none of the respondents gave very low (below 2.5) or very high (at a score of 5) scores, indicating that the respondents' perception of the variables was quite consistent and tended to be positive.

Validity and Reliability Tests

The validity and reliability test is carried out to ensure that the measurement instruments used in this study are valid and reliable. This analysis is important to ensure that the indicators used are able to measure constructs accurately and consistently. The validity of the indicators was tested through external loading and cross-loading analysis. Where the criterion used is outer loading ≥ 0.7, which means that the indicator must have a high enough load on the model construct. Discriminant validity is tested through the Fornell-Larcker Criterion and cross-loading, where the indicator must have the highest loading value in its construct compared to other constructs. The reliability of the indicators was tested using Composite Reliability (CR) and Average Variance Extracted (AVE). Where the criteria applied by CR ≥ 0.7 means that it indicates good internal consistency. AVE ≥ 0.5, which means that the indicator must be able to explain the variance of the construct significantly. The results of the validity and reliability test can be seen in Table 3 below.

Table 3. Validity and Reliability Test Results

Variable	Outer Loading (≥ 0,7)	CR (≥ 0,7)	AVE (≥ 0,5)
Advanced Technology	0,78 – 0,89	0,88	0,62
Digital Finance Innovation	0,75 – 0,87	0,86	0,58
National Economic Growth	0,76 – 0,88	0,89	0,60
Policies and Regulations	0,77 – 0,85	0,87	0,63

Source: SmartPLS data processing results

From the results of the analysis, all variable indicators showed an outer loading above 0.7, with a range between 0.75 to 0.89. This shows that the indicator has a fairly strong contribution to its construct. Based on the Fornell-Larcker Criterion, the discriminant validity of the root value of the average variance extracted (AVE) in each variable ranges from 0.58 to 0.75, greater than 0.5, indicating that the indicator is able to adequately explain the construct variance. In addition, cross-loading indicates that the indicator has the highest load on its own construct, so that the discriminant validity is met. The CR value for the entire construct is above 0.85, which indicates an excellent level of internal consistency.

The results of the validity and reliability analysis showed that all indicators used in this study met the set validity and reliability criteria. Thus, the indicator can be considered capable of accurately and consistently measuring constructs, making it feasible to use in future structural model analysis. Validity and reliability are met, ensuring that the results of the analysis of the relationships between variables will have a high level of confidence and can be interpreted validly.

Outer Loading Test

Outer loading testing is carried out to assess the reliability and validity of the indicator against its construct. Outer loading shows the strength of the relationship between the indicator and the construct it is measuring. A high outer loading value indicates an indicator that is able to effectively measure the construct in question, while an indicator with low outer loading needs to be considered for revision or removal. The indicator is said to be valid convergently if it has an outer load of at least 0.7.

This value indicates that the indicator is able to explain at least 50% of the variance of its construct (because the square of the outer loading is referred to as the communality indicator). The following are the results of the outer loading test of the indicators, which can be seen in Table 4 below.

Table 4. Outer Loading Test Results

Variable	Indicator	Outer Loading	Information
Advanced Technology	TC1, TC2, TC3, TC4, TC5	0,78 – 0,89	Valid, meets the ≥ limit of 0.7
Digital Finance Innovation	IKD1, IKD2, IKD3, IKD4, IKD5	0,75 – 0,87	Valid, meets the ≥ limit of 0.7
National Economic Growth	PE1, PE2, PE3, PE4, PE5	0,76 – 0,88	Valid, meets the ≥ limit of 0.7
Policies and Regulations	KR1, KR2, KR3, KR4, KR5	0,77 – 0,85	Valid, meets the ≥ limit of 0.7

Source: SmartPLS data processing results

The results of the outer loading test showed that all indicators met the convergent validity criteria, namely having an outer loading ≥ 0.7. A high outer loading value indicates that these indicators effectively measure the construct they represent. In other words, these indicators have a significant contribution to construct measurements and can be used for further analysis in structural models. In addition, indicators with high outer loading also show good indicator reliability, thus providing high confidence in the results of construct measurements carried out. These results support further steps in model analysis, including testing of discriminant reliability and validity, as well as testing of the designed hypothesis. The high validity of the indicator ensures that the measurement instrument is able to accurately represent the measured construct, thus supporting the validity of the overall research results.

Outer loading values ranging from 0.78 to 0.89 indicate that these indicators are able to adequately explain construct variance. For example, indicators in advanced technology constructs, such as TC1 to TC5, have an outer loading above 0.78, indicating that the indicator has a strong and consistent relationship with the construction being measured. Similarly, indicators on the Digital Financial Innovation, Economic Growth, and Policy and Regulation constructs also show high outer loading values, strengthening the validity of these constructs.

Normality Test

The normality test is an important step taken to ensure that the data used follows the normal distribution. This is important because many parametric statistical analysis techniques and PLS (Partial Least Square)-based SEM models assume that the data is distributed normally or close to normal. In this study, the normality test was carried out indirectly through the analysis of the distribution of indicator scores and constructs using the analysis of skewness and kurtosis. Skewness indicates the level of skewness of the data distribution, with a skewness value close to 0 indicating a symmetrical distribution. Kurtosis indicates the level of data distribution tape, with a kurtosis value close to 3 (or 0 if normalized) indicating a distribution close to normal. Using the analysis of the distribution of indicator scores of all variables, their distributions were analyzed to display the values of skewness and kurtosis. Where the assessment criteria skewness values between -1 to +1 are considered to indicate a distribution close to normal, and kurtosis values between -2 to +2 are also considered to be close to normal distribution. Based on the analysis of the distribution of this indicator's score, the results of the normality test can be seen in Table 5 below.

Table 5. Normality Test Results

Variable	Skewness	Kurtosis	Information
Advanced Technology	– 0,45	0,85	Distribution close to normal
Digital Finance Innovation	– 0,52	1,10	Distribution close to normal
National Economic Growth	– 0,40	0,78	Distribution close to normal
Policies and Regulations	– 0,48	1,05	Distribution close to normal

Source: SmartPLS data processing results

The results of the analysis show that the skewness and kurtosis values of all variable indicators are within the range that is considered to be close to the normal distribution. Skewness values ranging from -0.52 to -0.40 indicate a fairly symmetrical distribution of the data, while a kurtosis that ranges from 0.78 to 1.10 indicates that the distribution of the data is not too extreme and close to normal. Thus, it can be concluded that the sample data in this study meets the assumption of normality indirectly based on the score distribution indicator. This condition provides a solid basis for continuing inferential analysis and structural models.

Uji Hypothesis

Hypothesis testing is carried out to test the causal relationships between variables that have been formulated in a conceptual framework and whether the hypothesized relationships are statistically significant and support the underlying theory. The decision-making criteria were carried out by looking at the t-statistic value on the relationship between variables. Based on the statistical threshold, the t-value ≥ 1.96 for a significance level of 5% (α = 0.05), indicating a significant influence. Thus, the results of the hypothesis test can be shown in the following Table 6.

Table 6. Hypothesis Test Results

Research Hypothesis	Nilai t-statistic	p-value	Results	Information
H1: Advanced Technology → Digital Finance Innovation	4,25	< 0,001	Accepted	Significant, supporting H1
H2: Digital Financial Innovation → Economic Growth	3,89	< 0,001	Accepted	Significant, supporting H2
H3: Advanced Technology → Economic Growth	2,05	< 0,041	Accepted	Significant, supporting H3
H4: Advanced Technology → Digital Financial Innovation → Economic Growth	3,75	< 0,001	Accepted	Significantly, supporting the mediation hypothesis
H5: Policies and Regulations × Advanced Technology → Digital Financial Innovation	2,89	< 0,004	Accepted	Policies and regulations strengthen the influence of advanced technology on digital financial innovation
H6: Policies and Regulations × Advanced Technology → Economic Growth	2,45	< 0,014	Accepted	Policies and regulations strengthen the influence of advanced technology on national economic growth
H7: Policies and Regulations × Digital Financial Innovation → Economic Growth	3,12	< 0,002	Accepted	Policies and regulations strengthen the influence of digital financial innovation on national economic growth

Source: SmartPLS data processing results

These results show that all the main relationship paths in the model have a t-value of more than 1.96, so the influence between variables is partially significant at a significance level of 5%. Thus, it can be explained that the variables of advanced technology and digital financial innovation significantly affect national economic growth, according to the hypothesis proposed in this study. Based on the results of the above hypothesis test, it can be explained that H1 is proven: the application of advanced technology positively affects digital financial innovation, supporting the theory that technological innovation drives the development of digital-based financial services. H2 shows that digital financial innovation plays a mediator that strengthens the influence of technology on national economic growth. H3 confirms that the direct influence of advanced technologies on economic growth is also significant, although indirect influence through digital financial innovation shows greater power of influence. H4 also explained that the mediating role of digital financial innovation can increase the influence of advanced technology on economic growth, meaning that digital financial innovation can be a trigger for the development and utilization of technology in encouraging national economic growth. H5 explained the importance of the role of policies and regulations that are proven to strengthen the influence of advanced technology on digital financial innovation. H6 is proven to state that policies and regulations strengthen the influence of advanced technology on national economic growth, meaning the importance

of the role of policies and regulations to make technology the basis for economic growth. H7 also explained that the importance of policies and regulations can strengthen digital financial innovation to encourage national economic growth.

Discussion

The results of the study show that advanced technology has a positive and significant influence on digital financial innovation in Indonesia. This statement can be seen in the t-statistical value for the Advanced Technology → Digital Financial Innovation pathway of 4.25, with a p-value < 0.001. Based on statistical criteria, the t-value ≥ 1.96 and the p-value < 0.05 indicate that this relationship is statistically significant. These findings confirm that the adoption of cutting-edge technologies such as artificial intelligence (AI), blockchain, and the Internet of Things (IoT) is a major driver in the development of digital financial services. Technically, the technology improves the efficiency of the transaction process and data security and expands access to financial services to segments of society that were previously difficult to reach. This is in line with the theory of technological innovation, which states that technological progress is the main catalyst in the digital transformation of the financial sector.

Empirical analysis shows that advanced technology also contributes directly to national economic growth. This is shown in the t-statistical value for the Advanced Technology → Economic Growth pathway of 2.05, with p-value = 0.041. This value is greater than 1.96, and the p-value is < 0.05, so this relationship is statistically significant. The application of advanced technologies such as digital technology in the industrial and financial sectors increases productivity and competitiveness, which has a positive impact on economic output. Accelerating production processes, reducing operational costs, and opening up new market opportunities, thereby driving more inclusive and sustainable economic growth.

Digital financial innovation has proven to have a significant positive influence on national economic growth. This can be shown in the t-statistical value for the Digital Financial Innovation → Economic Growth pathway of 3.89, with a p-value < 0.001. This means that this innovation is very possible to expand financial inclusion, accelerate transactions, and increase access to capital for business actors, especially MSMEs. Thus, digital financial innovation plays an important role in connecting advanced technology with economic growth while strengthening the national digital economy ecosystem.

The results of the mediation test showed that digital financial innovation significantly mediated the relationship between advanced technology and economic growth. This can be shown in the t-statistical value of the mediation effect of 3.75 with a p-value of < 0.001, which shows that this mediation effect is statistically significant. Based on the results of the test, the impact of advanced technology on economic growth is not only immediate but also more effective through increasing digital financial innovation. In other words, advanced technology must be followed by the development of digital financial services innovations in order to make a maximum contribution to economic growth.

Adaptive and supportive policies and regulations have been proven to strengthen the link between advanced technology, digital financial innovation, and economic growth. This statement is evidenced by the t-statistical value that is able to moderate Policies and Regulations × Advanced Technology → Digital Financial Innovation of 2.89 with a p-value = 0.004, which is statistically significant. Good regulation creates an environment conducive to technology adoption and innovation, reduces the risk of uncertainty, and provides protection for consumers and business actors.

Innovative regulations that are responsive to technological developments allow for the acceleration of digitalization and optimization of the resulting economic benefits. This can be proven from the t-statistical value of the Policies and Regulations × Advanced Technology → Economic Growth of 2.45 with a p-value = 0.014 significantly. So that this research has technical implications, including strengthening technological infrastructure. Governments and industry players need to strengthen digital infrastructure that supports the widespread and equitable application of advanced technology.

The development of competent human resource capacity in digital technology is the key to the success of digital financial innovation in encouraging national economic growth. This performance can be seen in the t-statistical value in the moderation of Policies and Regulations × Digital Financial Innovation → Economic Growth of 3.12 with a p-value = 0.002, which is significant. This means that innovative and flexible policies on regulations must be designed adaptively to accommodate the dynamics of technology and innovation without hindering the creativity and growth of the digital sector.

Multi-stakeholder collaboration to synergize between government, industry, and academia needs to be enhanced to create a sustainable innovation ecosystem.

Conclusion

This test aims to assess the significance of direct and indirect relationships (mediation and moderation) between key variables, namely advanced technology, digital financial innovation, policies and regulations, and national economic growth. The conclusion of this study provides an empirical picture of the causal relationship as follows.

The application of advanced technology has a positive effect on digital financial innovation, bringing a direct impact on digital financial innovation in Indonesia. These findings support the theory that technological innovation is driving the development of digital-based financial services. In addition, the application of advanced technology will also encourage Indonesia's national economic growth.

Digital financial innovation has a positive effect on national economic growth; this is in line with the theory of developing digital financial services to improve economic efficiency and inclusion. Digital financial innovation mediates the influence of advanced technology on national economic growth. This confirms that the success of technology in driving economic growth is highly dependent on the success of digital financial innovation.

Supportive policies and regulations will strengthen the influence of advanced technology on the development of digital financial innovation. Because conducive regulations increase the effectiveness of digital innovation.

Supportive policies and regulations not only strengthen the influence of advanced technology but also strengthen the influence of digital financial innovation on national economic growth.

Research Findings

The results of the analysis show that the adoption of advanced technologies such as artificial intelligence, blockchain, and IoT significantly increases digital finance innovation. These findings confirm that technological innovation is a major factor in the development of digital-based financial services in Indonesia.

Digital financial innovation has been proven to significantly mediate the influence of technology on national economic growth. This shows that the success of technology in driving economic growth is highly dependent on the success of digital financial innovation as a connecting mechanism.

The application of advanced technology directly has a positive and significant effect on national economic growth, supporting the theory that explains that technological innovation is able to increase industrial efficiency and competitiveness.

The results of the analysis show that supportive policies and regulations have strengthened the influence of digital financial technology and innovation on economic growth, underscoring the importance of a conducive policy framework in the digital ecosystem.

Implication

The results of this study provide important implications for policymakers and industry players in Indonesia. First, strengthening the technology infrastructure and regulations that support digital innovation needs to be continuously improved so that the potential of advanced technology can be optimally utilized. Second, the development of digital financial innovation must be a priority to accelerate inclusive and sustainable economic growth. Third, cross-sector collaboration between the government, industry, and academia is the main key in strengthening the national digital innovation ecosystem. Overall, this study confirms that the synergy between advanced technology, digital financial innovation, and supportive policies is a key factor in driving Indonesia's national economic growth. These findings provide a strong empirical basis for the development of future innovation-based economic development strategies and digital technologies.

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