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Article

The impact of digital transformation for sustainable business: the meditating role of corporate governance and financial performance

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The impact of digital transformation for sustainable business: the meditating role of corporate governance and financial performance

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ABSTRACT

This paper aims to develop a model of sustainable business for Islamic rural banks in Indonesia through the transformation of digital, corporate governance, and financial performance. To achieve this objective, the quantitative research method was used, and the population in this research is 165 Islamic rural banks in Indonesia, while the sample used in this research is 30 Islamic rural banks in the West Java region from 2016 to 2021. The data used in this study is secondary data derived from financial statements and annual reports and analyzed using Partial Least Square (PLS). The research findings highlighted first that digital transformation significantly influences sustainable business. Second, digital transformation significantly influences corporate governance, and third, digital transformation significantly influences financial performance. Fourth, corporate governance has an insignificant influence on sustainable business for Islamic rural banks in Indonesia. Fifth, financial performance significantly influences sustainable business for Islamic rural banks in Indonesia. Sixth, corporate governance does not mediate the effect of digital transformation on sustainable business for Islamic rural banks in Indonesia. Seventh, financial performance is able to mediate the effect of digital transformation on sustainable business for Islamic rural banks in Indonesia. The practical contribution of this study offers empirical evidence for Islamic rural institutions regarding the impact of digital transformation on the sustainability of Islamic rural banks in the context of the dynamic digital economy and technological industry. While the topic of banks' digital transformation has garnered significant attention, the focus has primarily been on a macro level. The findings of this study show top management that digital transformation can potentially serve as a form of market value management. Additionally, this research might serve as a valuable resource for digital transformation organizations seeking to enhance their sustainability initiatives and expedite their progress in the realm of sustainable business practices, particularly for Islamic rural banks in Indonesia. Furthermore, the present study has demonstrated the importance and potential for digital transformation within the Islamic banking sector, hence offering a promising avenue for Islamic rural banks to enhance their operational efficiency and client satisfaction. Considering that limited attention has been given to studies of the relationship between digital transformation and sustainable business in Indonesian Islamic rural banks, this study contributes to the existing literature by examining digital transformation as a new view in explaining and understanding Indonesian Islamic rural banks, which fills the gap because prior research on the topic of digital transformation in Indonesia's Islamic banking sector has mostly ignored management viewpoints on internal corporate governance processes.

PUBLIC INTEREST STATEMENT

This research has developed a model of sustainable business for Islamic rural banks in Indonesia through the transformation of digital, corporate governance, and financial performance. The research used a quantitative research method and focused on a population of 165 Islamic rural banks in Indonesia. The sample for this study consisted of 30 Islamic rural banks in the West Java region from 2016 to 2021. The research findings highlighted first that digital transformation significantly influences sustainable business. Second, digital transformation significantly influences corporate governance,

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and third, digital transformation significantly influences financial performance. Fourth, corporate governance has an insignificant influence on sustainable business. Fifth, financial performance significantly influences sustainable business. Sixth, corporate governance does not mediate the effect of digital transformation on sustainable business. Seventh, financial performance is able to mediate the effect of digital transformation on sustainable business for Islamic rural banks in Indonesia.

1. Introduction

Indonesian Islamic rural banks are the main topic of this study. So far in 2022, there were 165 Islamic rural banks in Indonesia. That same month, there were 164 fewer Islamic rural banks, bringing the total number of banks to 1,453. These numbers show that the total number of Islamic rural banks is only 11.35 percent of the total number of commercial rural banks. Based on the fact that most people in Indonesia are Muslims and most of them live in rural areas, Islamic rural banks should be able to grow even more. This is because Islamic rural banks can help people in rural areas build their economies. The growth of Islamic rural banks in Indonesia has been slow due to the lack of innovation in their products and inadequate technological developments, especially in today's digital era where most financial transactions are carried out digitally. However, Islamic rural banks do have a distinct share market compared to the general banking market. In addition, Islamic rural banks have until now paid little attention to the driving force or driver of sustainability for Islamic rural banks. A sustainable business can be interpreted as one that produces both short-term and long-term benefits. If a company can achieve its business goals, increase long-term value, and consistently maintain it all, then a new business can be considered sustainable. In addition, a sustainable business must also be able to implement social, economic, and environmental values in its business strategy. Therefore, the present solution for the Islamic rural banks in Indonesia is digital transformation. Digital transformation is crucial for business growth, especially in banking. The banking industry relies heavily on digitalization because most financial institutions are competing to enhance and upgrade it. Mobile banking, e-banking, SMS banking, and other technologies allow access to practically all bank goods and services. Islamic rural banks compete with traditional rural banks, fintech, and internet credit; thus, technological advances are crucial. Thus, clients will abandon Islamic rural banks if they don't develop technology. However, digital transformation would enable a firm to create value for both customers and other stakeholders. Mostly, digital transformation would serve best when included at the business model level. Network effects may serve as a powerful force in digital business models since they have the capability to create a large-gets-larger reinforcing feedback loop, leading to potential winner-take-all market outcomes. Regarding the effect of digital transformation on sustainable business, According to Lingyan et al. (2021) and Oktavenus (2019), digital transformation has a favourable and significant impact on the company's business sustainability. When carrying out digital transformation, it is important to migrate data to the new system, although employees need time to adapt. This will greatly help the security and management of corporate data. Whatever the company's reasons for migrating to digital transformation, whether due to market demand or modernization, digital transformation is crucial for optimizing company profits, and digital transformation is the key to the progress of a company today, including the banking industry.

Generally, scholars expect the current industrial revolution to connect digital work processes and further enhance efficiency. Based on Pham and Vu (2022), experts expect the current industrial revolution to connect digital work processes and further enhance efficiency. Accordingly, these changes will also affect the companies' corporate governance by focusing primarily on digital operations. Digitalization will undoubtedly contribute to a more efficient organization of relationships within corporate governance. Therefore, the positive effects of digitalization would require a change in the relationships within corporate governance that enables a company to keep up with the most current trends and achieve long-term and successful performance. According to Grove et al. (2018), corporate governance is positively and significantly impacted by digital transformation. However, the goal of a sustainable business is basically to ensure business continuity, and many factors influence a company's sustainable business, including corporate governance. Its influence is considered one of the most vital factors within the Islamic banking

sector. The adoption of corporate governance in various Islamic financial institutions throughout the Muslim world, according to the authors, may boost public confidence in Islamic banks. Corporate governance would also aid Islamic banking organizations in sustaining and expanding their operations as well as their public standing and reputation. Furthermore, Islamic institutions' potential non-compliance with Islamic principles further emphasizes the importance of corporate governance. Therefore, good corporate governance has a safeguard role that enables the sustainable business activities of Islamic banks.

Continuously, (Alodat et al., 2023; Kartika & Utami, 2019; Mehmood et al., 2019) Corporate governance has a strong favourable impact on sustainable business in the Indian FMCG market. Contrarily, according to Hashim et al. (2015), the existence of a Sharia monitoring board does not affect sustainable practices. Therefore, to improve company performance, particularly in the banking industry, digital transformation is required to produce the most recent innovations that subsequently improve the company's performance. Furthermore, Shah et al. (2023) claimed that the financial performance of enterprises has significantly improved as a result of digital transformation. Furthermore, companies, including banks, must also demonstrate good performance in both financial and non-financial aspects. Furthermore, companies, including banks, must also demonstrate good performance in both financial and non-financial aspects. In order to further explore previous studies, The findings of a study by Mehmood et al. (2019) indicated that financial performance has a substantial impact on the long-term viability of Indonesia's Islamic banks. Financial performance has a considerable favourable impact on sustainable business at Islamic banks in Indonesia. Based on the discussion above, this study proposes to develop a model of sustainable business for Islamic rural banks in Indonesia through the transformation of digital, corporate governance, and financial performance. Therefore, this study formulates seven research questions:

1. Does digital transformation have a significant and positive effect on the sustainable business of Indonesian Islamic rural banks?
2. Does digital transformation have a significant and positive effect on corporate governance at Indonesian Islamic rural banks?
3. Does digital transformation have a significant positive effect on the financial performance of Indonesian Islamic rural banks?
4. Does corporate governance have a significant and positive effect on the sustainable business of Indonesian Islamic rural banks?
5. Does financial performance have a significant positive effect on sustainable business in Indonesian Islamic rural banks?
6. Does corporate governance mediate the relationship between digital transformation and sustainable business in Indonesian Islamic rural banks?
7. Does financial performance mediate the effect of digital transformation on sustainable business at Islamic rural banks in Indonesia?

To answer the research questions and achieve the research objective, this study will test and analyze the following relationships:

1. Test and analyze the digital transformation effect on the sustainable business of Indonesian Islamic rural banks.
2. Test and analyze the digital transformation effect on corporate governance at Indonesian Islamic rural banks.
3. Test and analyze the digital transformation effect on the financial performance of Indonesian Islamic rural banks.
4. Test and analyze the effect of corporate governance on the sustainable business of Indonesian Islamic rural banks.
5. Test and analyze the financial performance effect on sustainable business in Indonesian Islamic rural banks.
6. Test and analyze corporate governance to mediate the relationship between digital transformation and sustainable business in Indonesian Islamic rural banks.

7. Test and analyze financial performance to mediate the effect of digital transformation on sustainable business in Islamic rural banks in Indonesia.

The remainder of this paper is organized as follows: The second section reviews the literature and proposes hypotheses. The third section is the research method, which introduces the data, variables, and analysis. The fourth section is empirical results. The fifth section is a discussion. The sixth section presents conclusions.

2. Literature review and hypothesis

The Indonesian Central Bank Regulation No. 11/33/PBI/2009 defines corporate governance as bank governance that applies the principles of transparency, accountability, responsibility, professionalism, and fairness. According to the Organization for Economic Cooperation and Development (2004), corporate governance refers to the systematic order of relationships and responsibilities among stakeholders, designed to encourage the creation of good performance. At the same time, competitive advantage is also required to achieve the company's main objectives. A bank that cannot implement good corporate governance will face many problems in the future, such as fraud, liquidity problems, and others that will affect the bank's performance (Kartika & Utami, 2019). For this reason, the concept of sustainable business is very important for Islamic rural banks in Indonesia. Sustainable business also places significant emphasis on the capacity of future generations to independently fulfil their own needs. The concept of the Triple Bottom Line (TBL), alternatively referred to as the 3P, was introduced by Elkington in 1998. It encompasses three dimensions, namely profit, people, and the planet. Scholars widely regard the Triple Bottom Line (3P) as the fundamental principle for establishing a sustainable firm. Scholars posit that business operations should maintain a balance among the three key elements of the 3P framework. Consequently, the organization no longer solely faces obligations centred on a singular financial metric, namely, corporate principles that exclusively manifest in monetary circumstances. Instead, corporate duties ought to encompass the triple bottom line, including financial, social, and environmental dimensions. Therefore, the process of digitizing the financial industry is a pivotal factor in developing a sustainable economy, and the economy as a whole can benefit from several competitive advantages. The delineation between business and technological operations is increasingly becoming less apparent as conventional industrial structures and business models undergo disruption.

Based on Arifin et al. (2023), Desfiandi et al. (2019), and Sousa and Rocha (2019), the current era is characterized by the prominent role of technology in the global economy, which in turn offers a lasting competitive advantage. In the present era, information technology startups engage in a competitive landscape wherein they strive for digital innovation through the creation of solutions that leverage and foster synergistic relationships within sectors such as healthcare and home automation. The advent of reusable solutions, facilitated by innovative individuals, enables regional teams to strategically create and acquire a competitive advantage through the utilization of their products and services. Digital platforms have a significant influence on markets, society, and individuals, making them more prevalent in contemporary usage. The establishment of a novel economic domain and the subsequent modification of operational procedures have significantly transformed the global economy. Both consumers and businesses have had a notable economic impact as a consequence.

However, (Manita et al., 2020) defined digital transformation refers to the utilization of technology to convert analog or conventional procedures into digital alternatives that exhibit enhanced efficiency and effectiveness. Digital transformation encompasses a wide range of technologies and is expected to continuously evolve in the future. The advent of digital technology has catalyzed the emergence of novel business models and avenues for generating revenue. The company's financial success demonstrates its soundness over a specific time period. This is crucial to ensuring that resources are used as effectively as possible to address environmental changes. One tool to measure a company's financial performance that is commonly used is to measure its level of profitability. Profitability has a very important meaning in an effort to maintain the company's viability in the long term; it shows the company's future

possibilities. Thus, every company will focus its efforts on increasing its profitability to guarantee its chance of survival.

2.1. The effect of digital transformation on sustainable business

Han et al. (2023) and Sama et al. (2022) stated that the implementation of digital transformation within financial institutions has the potential to enhance operational efficiency, simplify procedures, and minimize resource utilization. Consequently, this can result in improved overall performance as well as enhanced levels of transparency and accountability. Moreover, the adoption of digital technologies enables organizations to actively communicate with stakeholders and effectively tackle social concerns, including but not limited to diversity, inclusion, and ethical practices. The adoption of this integrated strategy facilitates the advancement of a sustainable and robust future for both businesses and society at large. Additionally, companies that implement digital transformation can use it as a tool to accelerate human work and increase the pace of digital change exponentially. This is expected to improve company performance through various efficiencies and benefits, enabling sustainable business operations. However, regarding the effect of digital transformation on sustainable business (Oktavenus, 2019), According to Katsamakos (2022), Nurfadilah and Samidi (2021), and Vial (2019), digital transformation significantly and favorably affects the viability of the company's operations. Following the discussion, the hypotheses are stated as follows:

H1: *Digital transformation has a significant and positive effect on sustainable business for Indonesian Islamic rural banks.*

2.2. Effect of digital transformation on corporate governance

Speaking of corporate governance and digitalization, Sama et al. (2022) have approached both the internal and external dimensions of the subject, emphasizing their substantial impact on the value of the firm. Digital processes have a big effect on people who care about good corporate governance. They bring up a number of issues, including e-reputation, price volatility, operations that aren't based on physical goods, protecting board information, getting rid of middlemen, and the appearance of new players. These challenges arise due to the significance of ensuring shareholders' and stakeholders' confidence in the process of good corporate governance. The key to implementing good corporate governance amid challenges is digital transformation. Digital transformation is very important for implementing corporate governance. The studies are in line with Alsayegh et al. (2020) and Grove et al. (2018) and indicate the substantial influence of digital transformation on corporate governance. In the current era of digitalization and enhanced corporate governance practices, the Board of Directors could investigate key operating performance indicators. A starting point for developing such key metrics could be the digital values indicated by the 'efficient stock market' with the market-to-book ratio calculation. After the discussion, state the hypotheses as follows:

H2: *Digital transformation has a significant and positive effect on corporate governance at Indonesian Islamic rural banks.*

2.3. The effect of digital transformation on financial performance

Antwi and Kong (2023), and Kurniawan et al. (2021) found that digital transformation significantly impacts the performance of BJB Bank. The digital revolution has a very close and favorable impact on financial performance, according to Pham and Vu (2022). Therefore, in order to improve a banking company's performance, digital transformation is required to encourage innovations that would improve the company's performance, and research by Masoud and Basahel (2023) confirms that digital transformation has a positive direct influence on firm performance. A study by Jardak and Ben Hamad (2022) found a negative effect of digital transformation on firm performance. Continuously, a study by Guo and Xu (2021) demonstrates that digital transformation has a distinct impact on several aspects of organizational

performance and offers advice to businesses on how to define their digital transformation objectives. Therefore, based on the discussion, we state the following hypothesis:

H3: Digital transformation has a significant positive effect on the financial performance of Indonesian Islamic rural banks.

2.4. Effect of corporate governance on sustainable business

According to Nasrallah and El Khoury (2022) and Puni and Anlesinya (2020), corporate governance significantly and favorably influences Indonesian Islamic banks' ability to conduct sustainable operations. This (Kartika & Utami, 2019) research has provided evidence in favor of this claim, showing that corporate governance has a significant impact on the ability of the Indian FMCG industry to conduct sustainable operations. According to Al-Qudah et al. (2022) and Mehmood et al. (2019), corporate governance has a considerable and advantageous impact on sustainable business; those scholars also emphasize the need to look further into different organizational contexts. However, unlike the findings of Latifah et al. (2019) and Kartika and Utami (2019), the results regarding the relationship between corporate governance and sustainable business performance are also mixed. Many studies show positive effects between corporate governance and sustainable business, but others show that governance has no effect on business sustainability. After the discussion, we state the hypothesis as follows:

H4: Corporate governance has a significant and positive effect on the sustainable business of Indonesian Islamic rural banks.

2.5. Effect of financial performance on sustainable business

(Ayuba et al., 2019), demonstrate that the financial performance of the company will affect the capital structure because larger companies have high financial performance growth and are more willing to issue new shares and use the money to improve sustainable business practices. The financial performance of Islamic banks in Indonesia significantly improved their sustainability, as discovered in the study. Furthermore, the study found that financial success significantly affects the sustainable business of Islamic banks in Indonesia. Additionally, financial success at Indonesian Islamic banks has a considerable positive impact on sustainable business (Alsayegh et al., 2020). After the discussion, we state the hypothesis as follows:

H5: Financial performance has a significant positive effect on the sustainable business in Indonesian Islamic rural banks.

2.6. The effect of digital transformation on sustainable business, mediated by corporate governance

In previous studies (Katsamakas, 2022; Oktavenus, 2019; Pirola et al., 2020), research has found that digital transformation has a significant and positive influence on the sustainability of businesses. As mentioned earlier, digital transformation is having a significant and positive influence on corporate governance (Grove et al., 2018). Related to the influence of corporate governance on business sustainability, the results of the research claimed that corporate governance has a major and favorable impact on the sustainable business of Indonesian Islamic banks. Meanwhile, Kartika and Utami (2019) discovered that in the Indian FMCG industry, corporate governance has a large and advantageous impact on sustainable business. (Mehmood et al., 2019) demonstrated that corporate governance has a substantial and positive impact on sustainable business. Based on the discussion, we state the following hypothesis:

H6: Corporate governance mediates the relationship between digital transformation and sustainable business in Indonesian Islamic rural banks.

2.7. The effect of digital transformation on sustainable business, mediated by financial performance

Digital transformation has a large and favorable impact on the sustainability of the company's operations (Katsamakos, 2022; Oktavenus, 2019). According to Mangifera and Mawardi (2022), findings show that there is a significant effect of digital transformation on businesses' financial performance and state that it is important for small businesses to improve their digital skills and knowledge in order to meet customer needs and improve business sustainability. According to Miroshnychenko et al. (2021) and Szalavetz (2019), firms that adopt digitalization are better equipped to achieve their business goals and objectives, as digital technologies can help mainstream players switch to new verticals and develop their existing businesses. As well as (Ali et al., 2022), digitally transformed firms will outperform their rivals. It can lead to the early detection of opportunities and enhance firm performance. The hypothesis is stated as follows after the discussion:

H7: Financial performance mediates the effect of digital transformation on sustainable business in Islamic rural banks in Indonesia.

The conceptual framework can be suggested (Figure 1) based on the literature review and prior research:

3. Research method

The research population consists of 165 Islamic rural banks in Indonesia, while the sample comprises 30 Islamic rural banks in the West Java region for the period 2016–2021. The sample uses West Java because the most money circulates there. The data used in this research is secondary data derived from financial statements and annual reports. The sample selection criteria are: first, Islamic Rural Banks, which continuously report annual reports; second, Islamic Rural Banks, which have total assets > Rp 100 billion. Third, Islamic Rural Banks, which always make a profit during the research period. Moreover, we processed the data using Partial Least Squares (PLS). The reasons for using PLS are: 1). PLS can process all types of data. PLS has two tests in it, namely the measurement model test, which concerns construct validity and construct reliability. Besides that, it also has a structural model test, namely the t-test of the partial least square itself. so that it can present a variety of complete results and be analyzed thoroughly; 3). PLS can be used for predictions, confirmation of theories, and to describe whether there is a relationship between latent variables (Ab Hamid et al., 2017). PLS has a relationship between latent variables and their indicators in both reflexive and formative forms. The reflexive model posits that the latent variable or construct influences the indicator (the direction of the causal relationship from construct to indicator or manifest). Principal factor models often refer to reflexive models, where the latent construct influences the covariance of indicator measurements or reflects the variation of the latent construct. In the unidimensional construct reflexive model, this means that changes in latent constructs will affect changes in indicators.

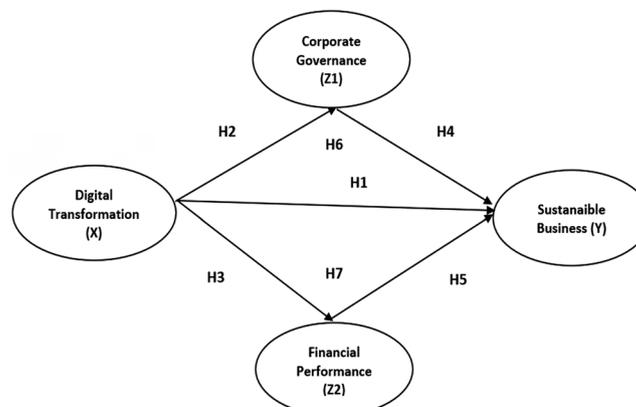


Figure 1. Conceptual framework.

The measures used to perform structural equation modelling using the Partial Least Squares (PLS) software are outlined below:

First step: Designing a Structural Model (inner model)

The design of relationship structural model between latent variables in PLS is based on problem formulation or hypothesis of the research.

Step Two: Measurement Model (outer model)

The design of measurement (outer model) in PLS is very significant because it relates to whether the indicator is reflective or formative.

Step Three: Constructing Path Diagram

When steps one and two are done, the results design of the inner model and outer model further is expressed in terms of the path diagram. Example forms for PLS path diagram are shown in Figure 2.

Step Four: the goodness of fit model

The goodness of fit model evaluated by looking at the percentage of variance explained, namely by looking at R^2 . Changes in the R^2 value can be used to assess the influence of certain independent latent variables on the dependent latent variable whether they have a substantive influence. The value of f^2 is equal to 0.02; 0.15; and 0.35 can be interpreted as meaning that the latent variable predictor has a small, medium and large influence at the structural level. In addition, Stone-Geisser Q-square evaluation was carried out for predictive relevance and t test as well as the significance of the structural path parameter coefficients. Q-square assesses how effectively the model and parameters generate observed values. A Q-square value over 0 implies predictive significance, whereas below 0 suggests non-predictive relevance.

Step five Hypothesis Testing

The final step is hypothesis testing with the following criteria:

If $H: \lambda \leq 0$; then it means the hypothesis is rejected if $H: \lambda > 0$; then it means the hypothesis is accepted.

4. Results and discussion

4.1. Evaluation model

The Model evaluation in this research with model predictions using partial least squares (PLS) to estimate parameters and predict relationships of causality, by evaluating the outer model and inner model. The results of the testing of convergent validity, discriminant validity, and composite reliability of the digital transformation, corporate governance, financial performance, and sustainable business variables are illustrated based on Table 1.

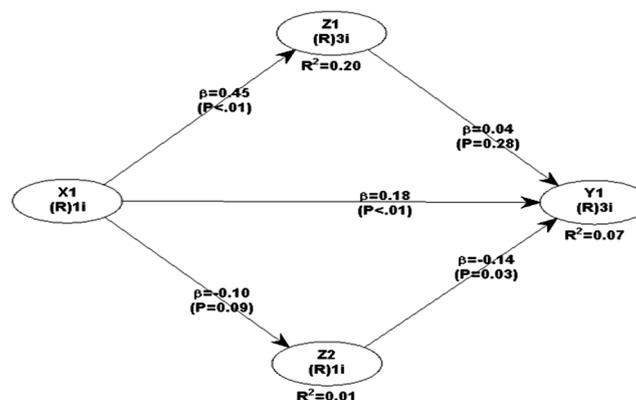


Figure 2. Construct a path diagram.

The result revealed that both **Composite reliability** and **Cronbach's Alpha** for all constructs are greater than 0.7, indicating that all constructs have adequate level of reliability. On the other hand, results from Table 1 also depicts that all constructs have adequate level of convergent validity, with AVE values for all constructs are greater than 0.5. By examining the square root of the **average variance extracted (AVE)** value, the results of the discriminant validity test may be found; the variable has a high level of discriminant validity if the AVE root value is greater than the correlation value with the other constructs. The analysis's findings lead to the determination that the AVE digital transformation value is 1,000 and that the AVE root value is also 1,000.

Based on Table 1, the test results show that the value of Cronbach's alpha has a value exceeding 0.70 for each variable, so it can be concluded that all indicators have fulfilled the reliability test, and the results of the composite reliability test show that the results of the analysis of digital transformation variables, corporate governance, financial performance, and sustainability business have a composite reliability value above 0.50, thus it can be stated that all variables have fulfilled the reliability test.

Convergent validity aims to determine the validity of each relationship between the question items used and the latent variables (Ab Hamid et al., 2017). PLS determines the measurement model's convergent validity with reflexive indicators by connecting the item score or component score with the latent variable score or construct score. Test results with a loading factor value above 0.7 are said to be ideal and valid. However, a factor loading value above 0.5 is still acceptable, but if the factor loading value is below 0.5, then the items used must be removed from the model. Below are presented the results of the outer loading for each indicator belonging to each exogenous and endogenous latent variable obtained from data processing using Smart PLS. Table 2 describes the loading factor value (convergent validity) of each indicator.

The **multicollinearity** in order to determine multicollinearity, find out that there is not a very strong or optimal linear relationship, or it could also be said that the independent variables are not related to each other. Based on Table 2, the following are the test results from the multicollinearity test carried out by comparing the VIF (variance inflation factor) value with the number 5. If the VIF value is > 5 , then multicollinearity occurs. The test findings indicate no multicollinearity between independent variables, as their VIF value is < 5 .

Structural model

Testing the structural model in partial least squares (PLS) analysis is known as the goodness of fit model test in the form of predictive relevance (Q^2). The predictive relevance value (Q^2) measures how well the observed values are produced by the model and also the parameter estimates. This value is calculated based on the value of the coefficient of determination (R^2) of the dependent latent variable, with the

Table 1. Table of algorithm.

Variable	AVE	Composite Reliability	Cronbach's Alpha
X	1.00	1.00	1.00
Z1	0.789	0.810	0.746
Z2	1.00	1.00	1.00
Y	0.948	0.735	0.732

Source: data processed 2023.

Table 2. Outer weight dan VIF.

	Outer Weight	P value	VIF
X1	1	<0.001	0
Z1.1	0.401	<0.001	1.259
Z1.2	0.487	<0.001	1.541
Z1.3	0.409	<0.001	1.282
ROA	1	<0.001	0
Y1.2	0.585	<0.001	1.259
Y1.3.	0.586	<0.001	1.26

Source: Data processing.

same interpretation as the regression. Q-square value > 0 indicates the model has predictive relevance; conversely, conversely if the Q-square value ≤ 0 indicates the model has less predictive relevance. The results of the R-square calculation are described in Table 3, below as follows:

The Q-squared predictive relevance (Q2) value is used to verify the model's viability based on the calculation results in Table 3. The formula and Q-square calculation results are as follows:

$$\begin{aligned} Q^2 &= 1 - (1 - Z_1^2)(1 - Y^2) \\ Q^2 &= 1 - (1 - 0,595^2)(1 - 0,785^2) \\ Q^2 &= 1 - (1 - 0.354025)(1 - 0.616225) \\ Q^2 &= 1 - (0.645975)(0.383775) \\ Q^2 &= 1 - 0.24790 = 0.75209 \times 100\% = 75.209\% \end{aligned}$$

The calculation showed a Q-square predictive-relevance (Q2) value of 75.209%. The Q-square predictive-relevance (Q2) value of 75.209% indicates the model was constructed is good because it has a predictive relevance of 75.209%. As a result, it is practical to apply the developed model for hypothesis testing.

$$\begin{aligned} Q^2 &= 1 - (1 - Z_2^2)(1 - Y^2) \\ Q^2 &= 1 - (1 - 0,644^2)(1 - 0,785^2) \\ Q^2 &= 1 - (1 - 0.414736)(1 - 0.616225) \\ Q^2 &= 1 - (0.585264)(0.383775) \\ Q^2 &= 1 - 0.22460 = 0.7754 \times 100\% = 77.54\% \end{aligned}$$

The calculation results show a Q-square predictive-relevance (Q2) value of 77.54%. The Q-square predictive-relevance (Q2) value of 81.9% indicates the model was constructed is good because it has a predictive relevance of 77.54%. As a result, it is practical to apply the developed model for hypothesis testing.

4.2. Hypothesis test

By testing the path coefficient using parameter estimates of 95% or $\alpha=0.05$, hypotheses are tested. The t-statistic > 1.960 or p-value < 0.05 would then be used to determine the importance of both the direct and indirect effects. Table 4 provides an overview of the hypotheses testing results.

Based on hypotheses testing in Table 4, the results indicate the direct effect of each variable can be explained as follows:

Table 3. Calculation of Q-square predictive-relevance (Q2).

Variable	R-Square
Z1	0.595
Z2	0.644
Y	0.785

Source: data processed 2023.

Table 4. Direct effect hypotheses testing.

Direct Effect	Coefficient	P-value	Description
X → Y	0.180	0.007	significant
X → Z1	0.446	0.001	significant
X → Z2	0.098	0.042	significant
Z1 → Y	0.044	0.275	no significant
Z2 → Y	0.143	0.025	significant

Source: data processed 2023.

1. The P-value for how the digital revolution will affect corporate sustainability is $0.007 < 0.05$, thus, it could be concluded that digital transformation has a significant positive effect on sustainable business.
2. The P-value for the effect of digital transformation on corporate governance is $0.001 < 0.05$, thus, it could be concluded that digital transformation has a significant positive effect on corporate governance
3. Considering that the relationship between the digital transformation and financial performance has a P-value is $0.0042 < 0.05$, it is possible to draw the conclusion that this relationship is significantly in favor of digital transformation.
4. The P-value for the relationship between corporate governance and business sustainability is $0.275 > 0.05$, indicating that there is no relationship between corporate governance and sustainable business.
5. The P-value of the influence of financial performance on business sustainability is $0.025 < 0.05$, hence, it might be inferred that financial performance has a significant positive effect on sustainable business.

Based on [Table 5](#), the results of testing the indirect effect of each variable can be explained as follows:

1. The P-value of the effect of digital transformation on business sustainability through corporate governance is $0.325 > 0.05$. Thus, it could be concluded that corporate governance is not able to mediate the effect of digital transformation on sustainable business.
2. The impact of digital transformation on business sustainability as measured by financial performance has a P-value of $0.034 > 0.05$. As a result, it is possible to draw the conclusion that financial performance might moderate the impact of digital transformation on sustainable business.

4.3. Effect of digital transformation on sustainable business Islamic rural banks

The result of the first hypothesis found that digital transformation had a significant positive effect on sustainable business for Indonesian Islamic rural banks. Accordingly, the banking business is very dependent on the development of information technology because customers want various conveniences in banking services, both products and services, through information technology systems. Therefore, Islamic rural banks in Indonesia are striving to enhance information technology to maximize the speed of information and customer service, particularly as the majority of customers now conduct their activities and transactions through internet services. The development of information technology will certainly have an impact on Islamic rural banking services in Indonesia. Islamic rural banks must be able to anticipate the needs of people who want fast service. For this reason, there is a need for innovation and the development of information technology. Besides that, Islamic rural banks must also face various challenges of competition, both within Islamic rural banks and with commercial rural banks, including competition with other Islamic financial institutions.

Ali et al. (2022), Desfiandi et al. (2019), and Mangifera and Mawardi (2022) stated that the use of information technology in innovation and knowledge-creation processes can increase the long-term success of companies and that information technology contributes to the development of innovations, all of which can increase the company's business sustainability. (Ayuba et al., 2019; Pirola et al., 2020) stated that innovation and technological development have a significant influence on the sustainability of microenterprises. Related to digital transformation, Carbó-Valverde et al. (2020) stated that investment in information technology can affect bank performance, which can affect sustainable business banks.

Table 5. Indirect effect hypotheses testing.

Indirect effect	P-value	description
$X \rightarrow Z1 \rightarrow Y$	0.325	No mediate
$X \rightarrow Z2 \rightarrow Y$	0.034	mediate

Source: data processed 2023.

4.4. Effect of digital transformation on corporate governance

The second hypothesis stated that digital transformation has a significant positive effect on corporate governance. The COVID-19 pandemic forced the banking industry to go digital. The banking digital transformation continues to be carried out, even though it requires information technology infrastructure to meet consumer needs. The development of information technology makes the banking industry ready to change and transform. Information technology changed how people conduct their daily activities, which affected the banking sector. The existence of financial technology (fintech) and technology partners in recent years has made challenges unavoidable. The lifestyle of people in Indonesia is evolving rapidly in the digital age. Expanding efficiency and effectiveness in the way work is handled through the use of information technology is known as the 'digital transformation'. This transition will impact each person and business in different ways. The digital transformation makes it easy for customers to carry out activities; not all have to interact directly, but online transactions can be done anywhere and any-time (Chen et al., 2023).

Moreover, corporate governance has significantly benefited from digital transformation. The digital age has made it possible for new competitors to emerge, funding cycles to become quicker, technology to become more fluid, customers to demand digital experiences, and non-traditional risks to increase. As a result, Ayuba et al. (2019), Desfiandi et al. (2019), and Latifah et al. (2019) suggested four strategies to assist boards of directors in overcoming such digital obstacles and seeing themselves as catalysts for such efforts: 1. Close the knowledge gap. 2. Recognize that digital technology may improve company models. 3. Engage in risk and strategy discussions more frequently and in-depth. 4.) Streamline the hiring process and fit of digital directors.

4.5. Effect of digital transformation on financial performance

According to the study's findings, digital transformation significantly improves financial performance. 'A process aiming at upgrading an organization by triggering significant changes in its attributes through a combination of information, computer, communication, and networking technologies,' is how digital transformation is defined (Vial, 2019). In this regard, digital transformation changes and builds the foundations of digital technology that transform business operations, processes, and value creation. To thrive in the contemporary epidemic period, digital transformation is both a trend and a requirement. The banking sector must undergo digital transformation because it is one of the sectors that must be extremely responsive and basic in nature. Thus, in the context of the banking business, digital transformation is required to produce the most recent innovations, which will ultimately increase corporate performance.

The results of this study are in line with Kurniawan et al. (2021), who disclosed that the impact of digital transformation on bank BJB performance is enormous. Thus, digital transformation must be implemented in order to produce the most recent technologies, which in turn increase the performance of the organization, especially in the banking sector. According to Katsamakos (2022) and Lingyan et al. (2021) digital transformation significantly improves the financial performance of Chinese industrial enterprises.

4.6. The effect of corporate governance on sustainable business Islamic rural banks

The result of the fourth hypothesis revealed that corporate governance has no effect on the business sustainability of Indonesian Islamic rural banks. This shows that Islamic rural banks in Indonesia have not been maximal in implementing corporate governance. However, research by Latifah et al. (2019) findings did not suffice to establish that effective corporate governance would ensure a sustainable company and that governance has no effect on business sustainability. The results of the research also did not provide sufficient evidence to support the notion that effective corporate governance guarantees long-term business sustainability. Furthermore, Kartika and Utami (2019), stated that corporate governance, which is proxied by foreign ownership and institutional ownership, has no effect on financial performance or sustainable business.

4.7. Effect of financial performance on sustainable business Islamic rural banks

The results of the fifth hypothesis state that financial performance has a significant positive effect on the business sustainability of Indonesian Islamic rural banks. The return on assets (ROA) assesses the company's capacity to generate profit, reflecting its financial performance. Thus, a higher level of profit earned by a company would generate greater sustainability for the company's business. In this case, it is safe to say that the higher level of profitability among the Indonesian Islamic rural banks would increase their business sustainability. The findings of this study are consistent with Jan et al. (2019). The results of the Malaysian Islamic Banking study found that the link between sustainable business practices and the firm's financial performance, measured from the shareholders' and management's perspectives, is positive. Similar findings from research conducted by Alsayegh et al. (2020) indicated that businesses with high profitability traits and solid long-term growth will have an effect on sustainable business.

4.8. Effect of digital transformation on sustainable business Islamic rural banks through corporate governance

According to the result of the sixth hypothesis, corporate governance was powerless to mitigate the impact of the digital revolution on the long-term viability of Indonesian Islamic rural banks. This indicates that Islamic rural banks in Indonesia have not been fully able to implement corporate governance properly and correctly, as evidenced by the low composite value of corporate governance in Indonesian Islamic rural banks. Therefore, this result states that governance does not mediate the influence of digital transformation on sustainable business in Islamic rural banks in Indonesia. Governance in this research is proxied by three indicators, namely the number of board of directors, the number of board of commissioners, and the number of Sharia supervisory boards (Sharia Supervisory Board). As is known, the existence of a Sharia supervisory board in Sharia financial institutions is mandatory, while the number of Sharia supervisory boards in Indonesia is still very limited. Sharia financial institutions in Indonesia start with Islamic banks, Islamist rural banks, Islamic insurance, Islamic pawn, and Islamic finance institutions, all of which require the existence of a Sharia supervisory board. Thus, in carrying out duties and work, it can be said to be less than optimal considering that one person on the Sharia supervisory board can serve in many sharia financial institutions. Based on the data above, the results of this research state that corporate governance does not mediate the influence of digital transformation on sustainable business. Thus, the hypothesis proposed in this research, which states that corporate governance mediates the influence of digital transformation on sustainable business, is declared rejected. The results of this study are in line with Nasrallah and El Khoury (2022), who examined 150 non-listed companies in Lebanon and found a positive impact of the corporate governance (CG) score and each of its components on the financial performance (FP), where it was demonstrated by the writers that it was insufficient to demonstrate that sound corporate governance would ensure company sustainability. Moreover, research by Latifah et al. (2019) supported such a finding, where the authors revealed that governance has no effect on business sustainability.

4.9. Effect digital transformation on sustainable business Islamic rural banks through financial performance

According to the seventh hypothesis finding, financial performance can mitigate the impact of digital transformation on Islamic rural banks' ability to conduct sustainable operations. As it is known, with digital transformation, there will be cost efficiencies, which will certainly affect financial performance. The existence of cost efficiency will increase the income of Islamic rural banks, which will ultimately affect sustainable business for Indonesian Islamic rural banks. Research conducted by Andriyani et al. (2021) shows that innovation and technological development significantly affect the sustainability of microenterprises. Likewise, research by Oláh et al. (2020) stated that Industry 4.0 has a significant effect on environmental sustainability. Additionally, research on the impact of digital transformation on financial performance. Furthermore, (Chen et al., 2023; Pham & Vu, 2022) concluded that digital transformation significantly improves financial performance.

5. Conclusion and suggestion

Based on this study's conclusion, the researchers relied on the available literature and empirical evidence to come up with a model of seven hypotheses. Based on the results, the researchers indicate that the first is that digital transformation significantly influences sustainable business. Second, digital transformation significantly influences corporate governance, and third, digital transformation significantly influences financial performance. Fourth, corporate governance has an insignificant influence on sustainable business. Fifth, financial performance significantly influences sustainable business. Sixth, the study finds that corporate governance is not working as a mediator in the relationship between digital transformation and sustainable business. The seventh finding of the financial performance of Islamic rural banks in Indonesia has the potential to act as a mediator in the relationship between digital transformation and sustainable business outcomes. Therefore, this research concluded that the role of digital transformation is crucial for the development and business sustainability of Indonesian Islamic rural banks. Islamic rural banks in Indonesia should continue upgrading their technology systems, bearing in mind that all financial transactions are currently and will be heavily dependent on technology. Besides, Islamic rural banks in Indonesia will compete with other financial institutions, such as rural technology and conventional financial institutions in Indonesia. The implementation of corporate governance in Indonesian Islamic rural banks has not been maximized, which will certainly impact their sustainable business, according to this study. Based on the above conclusions, the research has several recommendations, as follows: For future research, researchers should increase the number of research samples beyond the Java Island region. Additionally, they should consider conducting research on different research objects such as Islamic banks, Islamic insurance, Islamic pawnshops, or other Islamic financial institutions. Future researchers should increase the number of research samples that do not focus on the Java Island region and explore different research objects such as Islamic banks, Islamic insurance, Islamic pawnshops, or other Islamic financial institutions. Additionally, future researchers could develop this research model by adding several variables, such as environmental sustainability and governance (ESG). Because Islamic rural banks are expected to improve further the implementation of corporate governance in all operational activities of Islamic rural banks in Indonesia, not only focusing on making a profit but also paying attention to social and environmental factors is important, bearing in mind that to achieve sustainability, a business must also pay attention to social and environmental factors.

Disclosure statement

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