

# Toward Sustainable Islamic Banking: The Role of FinTech, Knowledge Management, Green Banking, and Sharia Compliance

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## Abstract

Islamic banking is facing increasing pressure to adopt sustainable business practices while maintaining compliance with sharia principles. In this context, Financial Technology (Fintech), Knowledge Management, Green Banking, and Sharia Compliance have emerged as critical factors influencing sustainability. This research aims to examine sustainable business models in Islamic banking in Central Java by analyzing the interrelations among these factors. A quantitative approach using Structural Equation Modeling Partial Least Squares (SEM-PLS) was applied to data from 515 sharia bank employees. The findings indicate that Fintech significantly influences Green Banking, Knowledge Management, and business sustainability, but does not directly affect Sharia Compliance. Green Banking significantly impacts both Sharia Compliance and business sustainability, while Sharia Compliance mediates the relationship between Green Banking and sustainability. These results highlight the need for deeper integration between Fintech and Islamic principles. Islamic banks are encouraged to develop strategies that synergize technological innovation, environmental responsibility, and religious compliance to achieve long-term, sustainable growth.

**Keywords:** Financial Technology; Green Banking; Knowledge Management; Sharia Compliance; Sustainable Business

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Introduction

Sharia banking in Central Java, as an integral part of the national financial system, plays a significant role in supporting economic stability and sustainable growth. To maintain the relevance and sustainability of its operations, Islamic banking faces various challenges, including rapid technological advancements, rising environmental awareness, and increasing demands for stricter Sharia compliance (Herindar et al., 2021). Addressing these challenges requires the development of sustainable business models that go beyond merely generating financial profit. These models aim to create long-term value for society and the environment (Dewaelheyns et al., 2023).

In today’s digital era, financial technology (Fintech) has become one of the primary drivers of transformation within the banking industry, including in Sharia banking. By adopting Fintech, Islamic banks can enhance operational efficiency, broaden service delivery, and strengthen financial inclusion (Wijaya, 2017). Furthermore, Fintech enables Sharia-compliant banks to offer products and services that are more responsive to customer needs, all while adhering to the foundational principles of Islamic finance.

Another critical component supporting innovation and sustainability in Sharia banking is knowledge management (KM) (Nurcahyo, 2024). By optimizing KM practices, Islamic banks can leverage institutional knowledge and experience to develop more innovative, market-relevant financial products and services. KM also contributes to improving human resource quality and organizational capability, enabling banks to navigate the rapidly evolving business environment effectively (Carl & Voss, 2003).

The current state of Sharia banking in Central Java reveals several gaps between existing practices and ideal expectations, as outlined in Table 1.

Table 1. Integration of the Sharia Banking Gap Phenomenon

Aspect	Present Condition	Ideal Condition	Gap Phenomenon
Adoption of Financial Technology	45% of sharia banks in Central Java have adopted fintech technology	85% of Islamic banks adopt fintech optimally	40% of Islamic banks have not adopted fintech optimally

Aspect	Present Condition	Ideal Condition	Gap Phenomenon
Knowledge Management Penetration	35% of Islamic banks have a structured and actively used KM system	90% of Islamic banks implement a comprehensive KM system	55% of Islamic banks lack optimal KM implementation
Implementation of Green Banking	20% of financing portfolios are directed toward eco-friendly projects	60% of financing directed at environmentally friendly projects	40% of portfolios are not directed toward green projects
Sharia Compliance Level	70% of operations fully comply with Sharia principles	100% compliance, including ethical and social responsibility aspects	30% of operations are not fully compliant with Sharia principles
Sustainable Business Development	50% of banks have a long-term sustainability focus	90% of banks adopt sustainability-oriented business models	40% of banks lack a focus on sustainable development
Infrastructure & Resources	55% of banks have adequate infrastructure for innovation	95% of banks have innovation-supportive infrastructure	40% face limitations in infrastructure and innovation resources

**Source:** Processed Sharia Banking Statistical Report (SPS), 2024

The data highlights significant discrepancies between current practices and ideal benchmarks. Low adoption rates of Fintech, insufficient knowledge management systems, and limited implementation of green banking indicate the need for substantial strategic efforts. Furthermore, while a majority of operations comply with Sharia principles, there are still areas for improvement—particularly in incorporating ethical and social responsibility dimensions (Huang 2015). These gaps underscore the urgency for more effective and integrated strategies to close the divide between actual and ideal performance, thereby advancing the sustainability agenda within Sharia banking.

With the growing global emphasis on environmental concerns, Green Banking has emerged as a relevant strategy for Sharia-compliant institutions to support sustainable development. Green Banking promotes not only energy efficiency and sustainable resource management but also the financing of projects that actively

contribute to environmental preservation (Chen, 2016). This approach is consistent with Sharia principles, which advocate for balance, justice, and social responsibility.

Sharia compliance remains the core foundation of Islamic banking operations. Importantly, Sharia compliance encompasses more than formal legal adherence—it includes the internalization of ethical and moral values recognized in Islam (Hadjri, 2015). It is a critical determinant of customer trust and loyalty and serves as a strategic advantage in the increasingly competitive banking sector.

This study aims to analyze the impact of integrating financial technology (Fintech) and green banking on the observance of Sharia principles in Islamic banking in Central Java, with particular attention to the role of robust knowledge management systems. The objective is to offer an empirically grounded and objective assessment of how these factors collectively influence the transformation of Sharia-compliant banking in the region. By focusing on Fintech, knowledge management, green banking, and sustainability, this research avoids subjective interpretations and bases its conclusions on data-driven analysis.

To maintain objectivity, the study employs a systematic methodology that integrates both quantitative and qualitative approaches, thereby ensuring a comprehensive understanding of the research problem. Data collection and analysis utilize validated instruments to ensure the results accurately reflect real conditions. The multidimensional lens—combining technological, managerial, environmental, and ethical perspectives—offers balanced insights into the challenges and opportunities facing Islamic banks as they strive to align with Sharia values while navigating an increasingly dynamic financial landscape.

## Literature Review

### **Financial Technology towards Green Banking, Knowledge Management and Sharia Compliance**

Financial Technology or Fintech according to Putri & Tasman (2019) is a technological innovation that aims to improve and automate the delivery and use of financial services. In the context of sharia banking, fintech includes various digital applications such as online payments, digital financing, sharia-based investments, as well as peer-to-peer lending platforms that comply with sharia principles (Berg et al., 2018). Fintech helps sharia banking to increase efficiency, expand the range of services, and provide a better experience to customers (Haryadi et al., 2024; Utama & Murti, 2021).

Green Banking according to [Bhardwaj & Malhotra \(2013\)](#) is a banking practice that focuses on efforts to minimize negative impacts on the environment. This includes various initiatives such as financing green projects, reducing paper use, energy efficiency in bank operations, as well as investment in green portfolios. Green Banking supports the concept of sustainability by paying attention to environmental sustainability, which is in line with sharia principles that encourage balance and social responsibility ([Islam, MA, Yousuf, S., 2014](#)) .

Knowledge Management is the process of managing organizational knowledge, including the creation, storage, sharing and application of knowledge to increase efficiency and innovation. In Islamic banking, KM plays an important role in optimizing existing knowledge for the development of new products and services, staff training, and more informed decision making ([Kim & Jung, 2022](#)). KM also helps banks to remain competitive by effectively utilizing available information and insights.

Sharia Compliance is compliance with sharia laws and principles in banking operations. This includes aspects such as the prohibition of *riba* (interest), *gharar* (uncertainty), and *maysir* (speculation), as well as ensuring that all products and services offered are in accordance with Islamic values ([Aisyah, 2018](#)). Sharia Compliance also involves sharia audits and supervision by the Sharia Supervisory Board to ensure that bank operations are carried out in accordance with Islamic law, which is critical to maintaining customer trust and loyalty.

In terms of Knowledge Management, fintech plays an important role in more efficient data collection, storage and analysis ([Refani, 2020](#)). Digital technology allows Islamic banking to manage knowledge more effectively, facilitating the rapid and accurate dissemination of information throughout the organization ([Nugroho, 2020](#)). This strengthens the bank's innovation capacity and responsibility in facing market changes, while improving the quality of human resources through technology-based training and development.

As for the influence of fintech on Sharia Compliance, this technology allows sharia banking to ensure compliance with sharia principles more effectively. Fintech provides tools to conduct real-time sharia audits, monitor transactions, and manage risks more transparently and accurately ([Dewaelheyns et al., 2023](#)). This not only increases operational efficiency but also builds customer trust in the bank's integrity and sharia compliance. Overall, fintech is a driver of transformation that strengthens the implementation of Green Banking, Knowledge Management and Sharia

Compliance in sharia banking, thereby supporting the achievement of a more sustainable business model (Nekmahmud, 2020).

H<sub>1</sub> : Financial Technology has a significant effect on Green Banking

H<sub>2</sub> : Financial Technology has a significant effect on Knowledge Management

H<sub>3</sub> : Financial Technology has a significant effect on Sharia Compliance

### **Green Banking against Sharia Compliance**

Green Banking and Sharia Compliance have a mutually supportive relationship in the context of sharia banking (Ahmmed, 2018). Green Banking, which focuses on environmentally friendly banking practices, such as financing sustainable projects and reducing carbon footprints, is in line with sharia principles which emphasize balance, social responsibility and environmental preservation (Handajani, Lilik, 2019). In Islam, preserving nature is part of human responsibility as caliphs on earth, which is also regulated in various sharia teachings. The implementation of Green Banking can strengthen Sharia Compliance by ensuring that all banking activities are not only free from usury, gharar and maysir, but also supports a larger goal, namely maqasid al-shariah, which includes the protection of religion, life, descendants, minds and property (Farida, 2012). Green Banking supports maqasid al-shariah by contributing to social welfare and environmental sustainability, which are an integral part of sharia objectives (Nurcahyo et al., 2024). Moreover, green banking includes adopting environmentally friendly practices in the bank's internal operations, such as energy-efficient buildings and reducing resource consumption (Nawangarsi & Sutawijaya, 2019). In addition, by adopting Green Banking practices, Islamic banks can demonstrate their commitment to broader ethical and moral principles, enhancing their reputation in the eyes of customers who are increasingly aware of environmental issues (Ahmar et al., 2024; Firdaus, 2013).

H<sub>4</sub> : Green Banking has a significant effect on Sharia Compliance

### **Knowledge Management and Sharia Compliance towards Sustainable Business**

Sustainable Business according to Devi Juwaheer (2019) is a business concept that focuses on achieving long-term sustainability by integrating economic, environmental and social considerations in all aspects of operations and decision making. In sustainable business, companies are not only oriented towards financial gain (profit), but also towards the resulting impact on the environment (planet) and

community welfare (people). Sustainable business practices involve using resources efficiently, minimizing waste and emissions, and ensuring that business activities do not harm the environment or society (Obamuyi, 2013). Companies that apply these principles are usually committed to adhering to high ethical standards, maintaining good relationships with stakeholders, and contributing positively to society. When KM and Sharia Compliance are combined, they create a powerful framework for Sustainable Business (Manzoor et al., 2019; Nurcahyo, 2024; Sarfraz et al., 2023). KM provides insights and tools to manage resources more effectively and innovatively, while Sharia Compliance ensures that business practices are in accordance with sharia values (Santoso, 2022). This combination encourages Islamic banks to not only focus on short-term profits, but also consider the long-term impact on society and the environment, so as to create a sustainable business (Adhima, 2017). Thus, KM and Sharia Compliance function as complementary pillars in creating and maintaining a socially and environmentally responsible business model in sharia banking.

H<sub>5</sub> : Knowledge Management has a significant effect on Sustainable Business

H<sub>6</sub> : Sharia Compliance has a significant effect on Sustainable Business

In the context of sustainable business models, mediation effects play a critical role in connecting and reinforcing strategic components such as Financial Technology (FinTech), Knowledge Management, Green Banking, and Sharia Compliance. FinTech serves as a central mediator by enabling digital innovation and automation, which enhance operational efficiency and the transparency of sustainability-related financial reporting (Chayanan, 2019). By digitizing financial services, FinTech supports real-time data analysis and more accurate performance tracking, which are essential for evaluating environmental and social impacts. Simultaneously, Knowledge Management facilitates the dissemination of institutional knowledge and best practices that underpin the successful implementation of both Green Banking initiatives and Sharia Compliance. It ensures that sustainability principles are not only understood conceptually but also embedded into everyday organizational behavior. By capturing and sharing relevant knowledge across departments, KM fosters an organizational culture oriented toward continuous improvement, ethical conduct, and innovation (Moraes et al., 2019).

Furthermore, Green Banking and Sharia Compliance themselves act as mediating mechanisms that direct and shape the application of sustainability practices. Green Banking contributes by minimizing the environmental footprint of

banking operations and by financing projects that support renewable energy, energy efficiency, and ecological preservation. Sharia Compliance ensures that all sustainability efforts align with Islamic legal and ethical standards, reinforcing accountability, social justice, and the equitable distribution of resources (Harsanty, 2017). Together, these two dimensions create a regulatory and moral framework that supports the implementation of FinTech and the cultivation of knowledge-sharing cultures. The interaction among these mediators generates synergistic effects that strengthen the overall sustainability strategy of Islamic financial institutions. When properly aligned, FinTech and KM can drive innovation and organizational learning, while Green Banking and Sharia Compliance ensure ethical and environmental alignment. This holistic integration supports improved sustainability performance, enhances a company's attractiveness to environmentally and ethically conscious markets, and ensures long-term compliance with both global sustainability standards and Islamic principles (Wibowo, 2014).

H<sub>7</sub> : Green Banking mediates Financial Technology on Sharia Compliance

H<sub>8</sub> : Knowledge Management mediates Financial Technology on Sustainable Business

H<sub>9</sub> : Sharia Compliance mediates Financial Technology on Sustainable Business

H<sub>10</sub> : Sharia Compliance mediates Green Banking on Sustainable Business

H<sub>11</sub> : Green Banking and Sharia Compliance mediate Financial Technology on Sustainable Business

## Methods

This research employs a quantitative approach through the Structural Equation Modeling–Partial Least Squares (SEM-PLS) technique. The quantitative method was chosen to enable an objective, measurable, and systematic analysis of relationships among the study's variables (Hair, 2017). SEM-PLS, a widely accepted multivariate analysis technique, is particularly well-suited for testing complex theoretical frameworks involving multiple latent constructs and indicators. It is especially appropriate when the primary aim is theory development and prediction, notably in cases where the data do not meet the assumption of multivariate normality (Sugiyono, 2013).



The choice of SEM-PLS is supported by several advantages. First, SEM-PLS facilitates the simultaneous assessment of the measurement model (outer model) and the structural model (inner model). The measurement model evaluates how well observed variables represent their latent constructs through indicators such as convergent validity, discriminant validity, and composite reliability. The structural model, by contrast, examines the hypothesized causal relationships among the latent constructs (Syiaiful, 2018). Second, SEM-PLS is tolerant of non-normal data and can accommodate relatively large samples. Third, it is appropriate for exploratory models aiming to generate new theoretical insights.

The data collection process involved a survey method, whereby structured questionnaires were distributed to the entire population of Islamic bank employees under study, using a saturated (total) sampling technique. This method was feasible due to the manageable population size and the relevance of each member's characteristics to the study's objectives.

A total of 515 valid responses were obtained—260 from employees of PT Bank Muamalat Indonesia, Central Java Regional Office, and 255 from employees of PT Bank Syariah Indonesia (BSI), Central Java Regional Office. The demographic profile revealed a gender distribution of 189 males and 326 females, reflecting notable gender diversity in the Islamic banking workforce in the region.

The research instrument was a Likert-scale questionnaire, with responses ranging from “strongly disagree” to “strongly agree.” The items were derived from established theories and prior empirical research. Before data analysis, the instrument underwent validity and reliability testing using SEM-PLS (Hair, 2017). Convergent validity was assessed via indicator loadings and Average Variance Extracted (AVE), while reliability was evaluated using Composite Reliability (CR) and Cronbach's Alpha.

## Result and Discussions

### Outer Model

Outer model, in the context of Partial Least Squares Structural Equation Modeling (PLS-SEM), refers to the relationship between indicators or manifest variables and the latent construct being measured (Syiaiful, 2018). In this research, the outer model is used to assess the validity and reliability of the indicators used to measure the constructs of Relationship Marketing Strategy (RMS), Sharia Product Knowledge (SPK), and sharia banking performance. Convergent validity is tested by

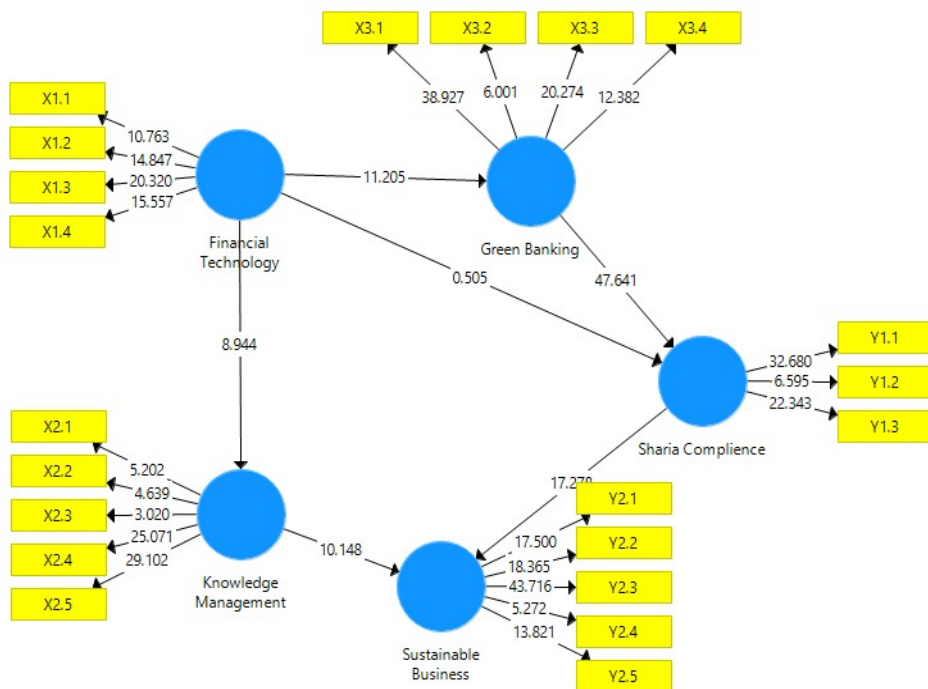
looking at the loading factor value of each indicator against the latent construct that should be measured, with a value above 0.7 considered adequate. In addition, construct reliability is evaluated through Composite Reliability (CR) and Average Variance Extracted (AVE), where CR values above 0.7 and AVE above 0.5 indicate that these indicators are consistent in measuring the latent construct in question. (Hair, 2017). Testing the outer model is important to ensure that the research instruments used are valid and reliable, so that the analysis results are more accurate and trustworthy.

**Table 2.** Measurement Evaluation Models

Latent Variables	Convergent Validity		Internal Composite Reliability			Discriminant Validity
	Indicators	Loadings	AVE	CR	C.A	HTMT
		> 0.70	>0.50	>0.70	>0.70	< 1
Financial Technology	FT.1	0.774				YES
	FT.2	0.782	0.785	0.977	0.710	
	FT.3	0.887				
	FT.4	0.799				
Knowledge Management	KM.1	0.747				YES
	KM.2	0.767				
	KM.3	0.856	0.724	0.935	0.741	
	KM.4	0.814				
	KM.5	0.732				
Green Banking	GB.1	0.846				YES
	GB.2	0.766	0.812	0.932	0.876	
	GB.3	0.883				
	GB.4	0.937				
Sharia Compliance	SC.1	0.765				YES
	SC.2	0.711				
	SC.3	0.788				
Sustainable Business	SB.1	0.746				YES
	SB.2	0.823	0.718	0.926	0.930	
	SB.3	0.763				
	SB.4	0.755				
	SB.5	0.888				

This research uses *Partial Least Square* (PLS) to analyze and evaluate the validity and reliability of the model construct using SmartPLS. SmartPLS was carried out to test the *Outer Model* and *Inner Model* of the research. The *outer model* test is carried out to see the validity and reliability of indicators and variables in research (Hair, 2017). This can be seen based on 3 categories at Table 3, namely (1) Convergent Validity which consists of an *outer loading value* with a value of  $>0.7$  and an AVE value  $>0.5$ . (2) Internal consistency is seen based on *Cronbach's alpha value*  $>0.7$  and *Composite Reliability* with criteria  $>0.7$ . (3) Discriminant validity is seen based on the *Fornell-Lacker value* where the root value of AVEsquare (diagonal) is greater than all other variable values and HTMT (*heterotrait-monotrait* correlation ratio) is less than 1. Based on the provisions, the indicators and variables in this research can be said to be valid and reliable.

**Figure 1.** Developed measurement model using Smart PLS



**Inner Model**

The inner model in Partial Least Squares Structural Equation Modeling (PLS-SEM) refers to the relationship between latent constructs in the research model. In this study, the inner model is used to test hypotheses regarding the relationship between Financial Technology (FinTech), Knowledge Management, Green Banking, and Sharia Compliance in the context of sustainable business models. This model investigates how FinTech as a digital innovation influences the effectiveness of Green Banking and the implementation of Sharia Compliance, as well as how Knowledge Management plays a role in supporting and strengthening these sustainability strategies. Inner model analysis involves testing the strength and direction of the relationship between these constructs through path coefficients and t-values resulting from bootstrapping (Priyono, 2016).

**Table 3.** Hypothesis Testing

	Original Sample	Sample Mean	Standard Deviation	T- Statistics	P-Value
Financial Technology towards Green Banking	0.725	0.727	0.065	11,205	0,000
Financial Technology on Knowledge Management	0.634	0.639	0.071	8,944	0,000
Financial Technology towards Sharia Compliance	-0.015	-0.015	0.030	0.505	0.307
Green Banking against Sharia Compliance	0.990	0.990	0.021	47,641	0,000
Knowledge Management towards Sustainable Business	0.403	0.405	0.040	10,148	0.009
Sharia Compliance towards Sustainable Business	0.658	0.655	0.038	17,278	0,000

**The Influence of Financial Technology on Green Banking**

Testing this hypothesis at table 3 shows that Financial Technology has a significant influence on Green Banking with a T-Statistic value of 11.205 and a P-Value of 0.000 (P-Value < 0.05). This indicates that the application of financial

technology contributes significantly to the successful implementation of Green Banking, where financial technology is able to support sustainable and environmentally friendly banking initiatives (Bestari, 2021). In sharia banks in Central Java, the implementation of financial technology still focuses on developing digital services such as mobile banking and sharia e-money. Employees at Islamic banks involved in this initiative recognize the importance of Fintech in supporting more efficient and environmentally friendly banking operations, although challenges such as technological literacy and infrastructure in remote areas are still obstacles (Chan, KW, 2010).

### **The Influence of Financial Technology on Knowledge Management**

In this test, the T-Statistic value is 8.944 with a P-Value of 0.000 indicating a significant influence between Financial Technology and Knowledge Management. This shows that the adoption of financial technology plays an important role in knowledge management in financial institutions, which can help in the creation, storage and distribution of relevant information to support business processes (Rezaei et al., 2021). Knowledge management in Central Java sharia banks is starting to be supported by technology, including the implementation of a digital-based knowledge management system. However, employee training regarding this technology still needs to be improved. Many employees feel the need for further adaptation to new systems to maximize knowledge management in the workplace.

### **The Influence of Financial Technology on Sharia Compliance**

The relationship between Financial Technology and Sharia Compliance is not significant, with a T-Statistic value of 0.505 and a P-Value of 0.307 (P-Value > 0.05). This shows that the application of financial technology does not directly affect compliance with sharia principles in financial institutions. In the field, Islamic bank employees in Central Java realize that the adoption of financial technology has not been fully integrated with the sharia compliance process (Munfaqiroh et al., 2023). There is still a need to strengthen employees' understanding of how financial technology can be implemented without ignoring sharia principles, such as ensuring transparency and ethics in digital transactions (Utama & Murti, 2021).

### **The Influence of Green Banking on Sharia Compliance**

There is a very significant influence between Green Banking and Sharia Compliance, as shown by the T-Statistic value of 47.641 and P-Value of 0.000. This

shows that Green Banking initiatives that are oriented towards environmental sustainability are also consistent with sharia principles, where sustainable banking activities are in line with ethical values in Islam (Ahmmed, 2018). Green Banking initiatives implemented by several sharia banks in Central Java are starting to be aligned with sharia principles, such as green financing and the use of environmentally friendly energy in branch offices. Employees are trained to implement banking practices that support environmental sustainability, which is also in line with sharia values regarding nature conservation (Majeed, 2022).

### **The Influence of Knowledge Management on Sustainable Business**

This test produces a T-Statistic of 10.148 and a P-Value of 0.009, which indicates the significant influence of Knowledge Management on Sustainable Business. This shows that effective knowledge management in an organization supports the achievement of sustainable business, where the organization's ability to utilize knowledge can increase efficiency and sustainable competitiveness (Suppiah & Sandhu, 2011). In Islamic banks in Central Java, knowledge management plays an important role in creating a sustainable business. Many employees are involved in skills development and training programs that encourage innovation in sustainable Islamic financial services (Pratiwi, 2016). The use of technology to store and share knowledge is key to creating efficient and ethical long-term business solutions.

### **The Effect of Sharia Compliance on Sustainable Business**

The test results show that Sharia Compliance has a significant effect on Sustainable Business with a T-Statistic value of 17,278 and a P-Value of 0.000. This indicates that compliance with sharia principles makes a positive contribution to achieving sustainable business. The application of sharia principles which include the values of justice, transparency and social responsibility has been proven to support long-term business sustainability (Dewaelheyns et al., 2023). Islamic bank employees in Central Java have a strong understanding of the importance of sharia compliance in building a sustainable business. Implementation of Sharia Compliance is not only applied to financial products, but also in daily operational practices which include transparency, social responsibility and business ethics (Herindar et al., 2021). Employees are trained to ensure that sharia principles are applied consistently in every aspect of the business, which ultimately supports the company's sustainability (Elingger, 2017).

**Table 4.** Testing Mediation Effects

	Original Sample	Sample Mean	Standard Deviation	T- Statistics	P- Value
Financial Technology > Green Banking > Sharia Compliance	0.718	0.720	0.064	11,143	0,000
Financial Technology>Knowledge Management>Sustainable Business	0.255	0.258	0.030	8,389	0,000
Financial Technology>Sharia Compliance>Sustainable Business	-0.010	-0.010	0.020	0.501	0.308
Green Banking > Sharia Compliance>Sustainable Business	0.651	0.649	0.043	15,218	0,000
Financial Technology > Green Banking > Sharia Compliance>Sustainable Business	0.472	0.472	0.054	8,736	0,000

### **Green Banking Mediates the Effect of Financial Technology on Sharia Compliance**

The test results at table 4 indicate that Green Banking mediates the effect of Financial Technology on Sharia Compliance, with a T-statistic of 11.143 and a p-value of 0.000, indicating statistical significance at the 5% level. This suggests that the implementation of financial technology significantly influences Sharia compliance through the mediating role of Green Banking. This finding indicates that financial technology adopted by Islamic banks can support Green Banking initiatives, which in turn foster adherence to Sharia principles. Collectively, these dimensions contribute to a regulatory and ethical framework that facilitates FinTech implementation and promotes a knowledge-sharing culture (Kalkan et al., 2014). The interaction between these mediating variables generates synergistic effects that enhance the sustainability strategies of Islamic financial institutions. When effectively integrated, FinTech can drive innovation and organizational learning, while Green Banking and Shariah compliance frameworks safeguard ethical and environmental integrity (Bhardwaj & Malhotra, 2013). This finding illustrates a significant interconnection among Financial Technology (FinTech), Green Banking,

and Shariah Compliance within Islamic banking institutions. The adoption of financial technology in Islamic banks facilitates not only operational efficiency and customer-centric services, but also advances Green Banking initiatives—efforts aimed at promoting environmentally responsible banking practices (Riana, 2024). When embedded within a Shariah-compliant framework, FinTech becomes a powerful instrument for supporting ethical innovation and sustainable finance, thus bridging technological advancement with the ethical imperatives of Shariah and environmental sustainability.

Theoretically, this relationship can be framed within the Triple Bottom Line (TBL) framework introduced by Elkington (1998), which emphasizes the integrated pursuit of economic, social, and environmental objectives (Sulistyowati et al., 2023). In this context, FinTech represents the economic and technological dimensions; Green Banking corresponds to the environmental dimension; and Shariah compliance embodies the social and ethical dimensions (Haryadi et al., 2024). The integration of these three dimensions establishes a holistic sustainability framework tailored to the principles of Islamic finance. By aligning FinTech innovations with Shariah principles and environmental responsibility, Islamic banks can achieve profitability without compromising ethical obligations or ecological stewardship.

Furthermore, the Resource-Based View (RBV) theory, as introduced by Barney (1991), supports the notion that an organization's internal capabilities—including technological innovation, ethical governance, and sustainability practices—are critical sources of competitive advantage (Barney, 2001). When integrated with Green Banking and Shariah principles, FinTech transcends its role as a mere digital tool and emerges as a strategic resource characterized by the VRIN attributes: valuable, rare, inimitable, and non-substitutable. This unique configuration enables Islamic banks to differentiate themselves within a competitive financial landscape through ethical positioning and technological excellence.

The interaction between Green Banking and Shariah Compliance also fosters a regulatory and moral infrastructure that governs the implementation of FinTech. Green Banking, through its emphasis on eco-friendly lending, investment strategies, and internal operations, establishes environmental standards and operational boundaries (Oladapo, 2024). Meanwhile, Shariah compliance ensures that all financial activities adhere to Islamic legal and ethical norms. Together, these two dimensions create a dual-layered framework—one regulatory and one spiritual—that not only restricts unethical or environmentally detrimental practices but also actively fosters responsible innovation. This supports the development of a



knowledge-sharing culture, embedding ethical considerations into decision-making processes and advancing organizational learning and long-term sustainability.

### **Knowledge Management Mediates the Effect of Financial Technology on Sustainable Business**

The results indicate that Knowledge Management mediates the effect of Financial Technology on Sustainable Business, with a T-statistic of 8.389 and a p-value of 0.000. This suggests that financial technology influences business sustainability through effective knowledge management. Islamic bank employees who effectively manage organizational knowledge through technological tools are more likely to support sustainable business initiatives.

In the context of sustainable business models, mediation effects play a critical role in connecting and reinforcing strategic components such as Financial Technology (FinTech), Knowledge Management, Green Banking, and Shariah Compliance. FinTech serves as a central enabler of digital innovation and automation, enhancing operational efficiency and improving the transparency of sustainability-related financial reporting ([Chayanan, 2019](#)). FinTech plays a multifaceted mediating role by facilitating digital innovation, streamlining operations through automation, and introducing data-driven solutions that enhance the speed, accuracy, and transparency of financial processes. As noted by [Sajeda Alma'abreh et al. \(2023\)](#), FinTech improves not only operational efficiency but also the quality and transparency of sustainability-related reporting, thereby supporting corporate accountability and stakeholder trust ([Rezaei et al., 2021](#)).

From the perspective of Dynamic Capability Theory, as proposed by [Teece et al. \(1997\)](#), FinTech represents an organizational capability that enables firms to sense, seize, and reconfigure resources in response to environmental changes. Positioned as a mediator, FinTech allows Islamic financial institutions to integrate sustainability imperatives—such as environmental responsibility and ethical compliance—into their core operational strategies ([Stosberg, 2005](#)). For instance, through digital platforms, banks can implement paperless transactions, support green investments, and offer Shariah-compliant financial products with greater accessibility and efficiency. Moreover, FinTech enhances Knowledge Management by providing the technological infrastructure for data collection, analytics, and knowledge dissemination across the organization. This supports the Knowledge-Based View (KBV) of the firm, as articulated by [Grant \(1991\)](#), which views knowledge as a strategic asset for achieving sustainable competitive advantage. Through FinTech,

knowledge flows more effectively within the institution, supporting informed decision-making aligned with Shariah principles and ecological goals (AlTaweel & Al-Hawary, 2021).

The mediating role of FinTech also facilitates the translation of Shariah compliance into actionable and auditable processes. For example, blockchain-based smart contracts can automate compliance with Islamic financial regulations, reducing human error and enhancing stakeholder confidence. Simultaneously, FinTech tools can monitor and report environmental impacts, helping to bridge the gap between ethical intent and measurable outcomes.

### **Shariah Compliance Mediates the Effect of Financial Technology on Sustainable Business**

In this pathway, the mediation effect is not statistically significant, with a T-statistic of 0.501 and a p-value of 0.308 ( $p > 0.05$ ). This result indicates that Shariah Compliance does not significantly mediate the relationship between Financial Technology and Sustainable Business outcomes. In other words, financial technology does not directly influence business sustainability through Shariah compliance mechanisms. This suggests that the role of Shariah Compliance in promoting business sustainability may be influenced more by institutional or regulatory factors than by technological innovation alone.

Financial Technology (FinTech), as defined by Putri & Tasman (2019), refers to technological innovations aimed at improving and automating the delivery and use of financial services. In the context of Shariah banking, FinTech encompasses a wide range of digital applications—including online payment systems, digital financing platforms, Shariah-compliant investment portals, and peer-to-peer (P2P) lending services—that adhere to Islamic legal and ethical norms (Masduqie et al., 2021; Utama & Murti, 2021). These digital tools not only ensure compliance with prohibitions such as *riba* (interest), *gharar* (excessive uncertainty), and *maysir* (gambling), but also promote foundational principles like profit-and-loss sharing, transparency, and risk-sharing, which are central to Islamic finance.

According to Utama & Murti (2021), the adoption of FinTech in Shariah banking enhances operational efficiency, reduces transaction costs, and expands the reach of Islamic financial services—particularly among unbanked or underbanked populations. Digitalization allows Shariah-compliant institutions to offer more inclusive, scalable, and user-friendly services, thereby improving customer satisfaction and advancing financial inclusion in line with the *maqāṣid al-sharī'ah*

(objectives of Islamic law), which emphasize justice, social welfare, and economic equity.

From a theoretical standpoint, the integration of FinTech into Shariah-compliant financial services aligns with the Technology–Organization–Environment (TOE) framework (Wiyawan et al., 2024), which posits that technological adoption is influenced by technological readiness, organizational capacity, and external environmental conditions. For Islamic banks, this adoption is shaped by institutional readiness (e.g., IT infrastructure), regulatory structures accommodating Shariah principles, and growing customer demand for ethical, digital financial services.

### **Shariah Compliance Mediates the Effect of Green Banking on Sustainable Business**

This test reveals that Shariah Compliance significantly mediates the relationship between Green Banking and Sustainable Business, with a T-statistic of 15.218 and a p-value of 0.000. This indicates that Green Banking initiatives implemented by Shariah-compliant banks enhance business sustainability by strengthening adherence to Islamic principles. Employees engaged in environmentally responsible banking activities tend to exhibit stronger compliance with Shariah values, which ultimately contributes to improved sustainability outcomes.

Green Banking supports the *maqāṣid al-sharī'ah* by contributing to social welfare (*maṣlaḥah 'āmmah*) and environmental stewardship—dimensions that are integral to the ethical underpinnings of Islamic finance (Nurcahyo et al., 2024). As noted by Firdaus (2013), Islamic banks that adopt environmentally responsible practices also enhance their ethical reputation among environmentally conscious customers. Specifically, Green Banking aligns with the Shariah objective of preserving the environment (*ḥifẓ al-bi'ah*) by minimizing ecological harm and encouraging sustainable economic behavior (Nurcahyo et al., 2024). This alignment is especially vital in today's context of global climate challenges, where environmental degradation directly threatens social welfare—an outcome Islamic finance must address to maintain its moral distinction from conventional systems (Khuzaini et al., 2024; Mergaliyev et al., 2021; Fageh, 2022).

## **Green Banking and Shariah Compliance Mediate the Effect of Financial Technology on Sustainable Business**

In this pathway, the effect of Financial Technology on Sustainable Business is mediated by Green Banking and Shariah Compliance, as evidenced by a T-statistic of 8.736 and a p-value of 0.000. This finding suggests that financial technology, when adopted by Islamic banks, indirectly promotes business sustainability through environmentally responsible banking practices and adherence to Shariah principles. Employees trained in the use of environmentally friendly and Shariah-compliant financial technologies are more likely to contribute to sustainable business practices over the long term.

Institutions that embed these dual mediators into their operations tend to uphold high ethical standards, cultivate strong stakeholder relationships, and contribute meaningfully to societal well-being. The simultaneous integration of Green Banking and Shariah Compliance creates a robust foundation for achieving sustainable outcomes. This framework aligns technological innovation with ethical governance and environmental stewardship—hallmarks of sustainability-oriented Islamic finance.

The literature underscores that when Knowledge Management (KM) and Shariah Compliance are combined, they form a complementary mechanism for advancing sustainable business ([Manzoor, 2020](#)). KM equips organizations with the insights and capabilities needed to allocate resources effectively and drive innovation, while Shariah Compliance ensures that these processes remain aligned with Islamic ethical and legal norms ([Santoso, 2022](#)). This synergy enables Islamic banks to move beyond short-term profitability and incorporate long-term considerations related to social equity, ecological balance, and intergenerational welfare ([Adhima, 2017](#)).

Moreover, the implementation of Green Banking strategies enhances the reputational capital of Islamic banks, particularly among environmentally conscious customers. As public awareness of climate change and sustainability intensifies, customers increasingly prefer institutions that align with their ethical and environmental values ([Niazi et al., 2023](#)). This alignment is especially pronounced among millennial and Gen Z demographics, for whom environmental and social responsibility are key decision-making factors in financial services. Consequently, integrating ecological responsibility into Islamic banking not only supports sustainability goals but also serves as a strategic differentiator that strengthens customer trust and loyalty ([Satyakti, 2023](#)).

## Conclusion

This study highlights the strategic importance of integrating financial technology with Shariah principles in Islamic banking. The findings have practical implications for management, including the need to develop policies that support the adoption of Shariah-compliant FinTech, enhance employee training on digital transaction ethics, and improve technological literacy. In addition, Islamic banks are encouraged to promote Green Banking by implementing environmentally responsible practices that align with Shariah values. The integration of Shariah compliance with environmental sustainability contributes to building a robust foundation for long-term sustainable growth.

Managers should ensure that FinTech adoption goes beyond operational efficiency and remains aligned with the ethical and legal foundations of Islamic finance. This can be achieved through institutional policies that merge technological innovation with Shariah standards, alongside structured training programs that emphasize transparency, ethics, and responsible digital financial conduct. Increasing technological literacy among employees is also essential for maximizing the benefits of FinTech tools.

Furthermore, Green Banking should be prioritized as a key component of the bank's sustainability strategy. Management must actively promote initiatives such as the use of renewable energy, reduction of operational waste, and adoption of sustainable financing practices—all in accordance with Shariah principles. These eco-conscious efforts, when tightly integrated with religious and ethical standards, have been shown to enhance both business sustainability and customer trust.

However, this research is subject to certain limitations. The sample is restricted to employees of Islamic banks in the Central Java region, which may limit the generalizability of the findings to other regions or the national context. Moreover, the study relies solely on quantitative data, which may not fully capture the qualitative dimensions of FinTech implementation and Shariah compliance dynamics. The absence of a longitudinal approach also restricts the ability to assess the long-term impacts of the variables examined. Future research is recommended to include broader geographical samples, incorporate qualitative insights, and adopt longitudinal designs to provide a more comprehensive understanding of these relationships over time.

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