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Empowering Green Growth: Unleashing the Potential of Fintech and Islamic banking in Malaysia

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Abstract:

Considers corporate governance one of the aspects of the administration contemporary meant to be applied in the structures of the administration of institutions because of their many advantages, and multiple owners and shareholders of those institutions, this is the basis of theories that explained the behavior of managers as well as following the recent financial crises that hit the economies of some regions of the world in the second half of the nineties, and some passion collapse of major global institutions, where it was in this context to make international efforts in order to establish and apply the principles of governance

Keywords: *corporate governance; the Audit Committee; corruption; Board of Directors; Internal Audit.*

Jel Classification Codes: *G3, G39*

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1. Introduction:

The global pursuit of sustainable economic development has become a critical priority in the face of escalating environmental challenges. In this context, the intersection of financial technology (Fintech), Islamic finance, and sustainability presents a unique opportunity to foster green growth and unleash the potential of sustainable economic development.

Islamic finance, serving a significant population of 2 billion Muslims worldwide, has emerged as a rapidly expanding segment within the global financial market. Despite the challenges presented by the COVID-19 pandemic, the Islamic finance industry demonstrated resilience, achieving consecutive double-digit growth of 14% in 2020, amounting to $3.4 trillion. The sector is expected to maintain its growth trajectory and is projected to reach a substantial total of approximately $4.9 trillion in global assets by the year 2025. As of 2020, the estimated count of Islamic financial institutions stands at 1,595 worldwide. **(FWD Islamic fintech report 2022)**

While Islamic Fintech holds immense potential for driving sustainable economic development, it also poses challenges and considerations that need to be addressed. Regulatory frameworks must be established to ensure compliance with Shariah principles and promote sustainable financial practices. Ethical and social considerations must be addressed to align technological advancements with Islamic values and societal well-being. Data privacy and cybersecurity concerns need to be addressed to protect the integrity of financial transactions. Additionally, capacity building and technological infrastructure must be prioritized to ensure broad-based adoption and effective implementation of Islamic Fintech solutions**. (Unal & Aysan, 2022)**

In light of what have been discussed we can ask the following question: **"how can Islamic banking empower green economy through the adoption of Fintech?".**

Several hypotheses can be emphasized, where fintech applications in Islamic financial sector in Malaysia, holds immense potential to contribute to sustainable economic development. The country's robust Islamic finance industry, coupled with its drive towards digital transformation and commitment to environmental sustainability, creates a fertile ground for the integration of Islamic Fintech. Malaysia's strategic positioning as a hub for Islamic finance and its commitment to sustainable development goals make it an ideal setting to explore the transformative impact of Islamic Fintech on driving green growth.

This study delves into the potential of Fintech and Islamic finance in driving sustainable economic development in Malaysia focusing on green sustainability. It also explores the various ways

in which Fintech can empower green growth, such as digital banking platforms and mobile applications using Bayesian approach. The subsequent sections of this paper are organized as follows: Section 2 presents the literature review, Section 3 outlines the methodology adopted for this study, Section 4 presents the results and discussion, and finally, Section 5 concludes.

2. Literature review:

Financial Technology, commonly referred to as Fintech, has emerged as a highly disruptive force in the modern era **(Fu & Mishra, 2022).** While the global financial crisis of 2007-2008 played a significant role in the proliferation of Fintech, its rapid growth can be attributed to two key factors. Firstly, the waning confidence of customers in traditional financial services has propelled them to seek alternative solutions **(Lv & Xiong, 2022)**. Secondly, the surge in technology-driven entrepreneurship has led to the development of innovative concepts, ideas, and applications, particularly tailored for mobile users, revolutionizing communication, interaction, and user experiences in financial transactions **(Lai et al., 2023).**

2.1. Fintech and Islamic finance:

The relationship between Fintech and Islamic finance is characterized by mutual influence and transformative potential. Fintech, with its innovative technologies and digital solutions, enhances accessibility to Islamic financial services and improves operational efficiency. It promotes financial inclusion, enables innovative financing solutions, and enhances transparency and regulatory compliance within Islamic finance. The collaboration between Fintech and Islamic finance was discussed in many papers such as **(Rahman et al., 2022)** who investigates the role of financial technology (Fintech) during pandemics on Islamic financial institutions and banks' performance. It suggests that the adoption of greater digitalization and incorporation of fintech strengthens the spirit of the industry in a more unstable ecosystem and open another new opportunity for growth. In addition, **(Monika et al., 2021)** looks at the determinants that influence the profitability of Islamic commercial banks. The study finds that Fintech development has a positive effect on returns on Assets (ROA) of private Islamic banks and has a negative effect on ROA of state-owned Islamic banks. **(Zuhroh, 2021)** discusses the impact of Fintech on Islamic banking in Indonesia. Findings revealed that Islamic banks should collaborate with Fintech companies to improve their services. Moreover**,**

(Ali et al., 2019) investigates the potential impact of Fintech on the Islamic banking and finance industry in Brunei and Malaysia using qualitative methods. This study finds great potential impact of fintech on both conventional and Islamic finance industry**. (Panjwani & Shili, 2020)** revealed that financial technology innovations can help to enhance the quality of Islamic banking sector services. In conclusion, Islamic finance provides a solid foundation for ethical and Shariah-compliant practices, offering a unique framework for the adoption and application of Fintech solutions.

From another side **Islamic Fintech** refers to the application of financial technology within the framework of Islamic finance, which operates based on ethical principles and guidelines derived from Shariah law.

Table 01: FinTech tools

Type of islamic Fintech	Description
Digital Banking Platforms	Online platforms that offer Shariah-compliant banking services and enable digital transactions.
Halal financing platforms	These platforms provide avenues for halal financing, such as peer-to-peer (P2P) lending, where individuals or businesses can borrow or lend money in compliance with Islamic principles.
Mobile Applications	Mobile apps providing access to Islamic financial services, including mobile banking and wallets such as Zakat calculation, charitable contributions, and transaction categorization for better financial management according to Islamic values
Crowdfunding Platforms	Online platforms connecting Shariah-compliant investment seekers with potential investors.
Robo-Advisory Services	Automated investment advice based on Shariah principles, utilizing algorithms and AI.
Blockchain Technology	Technology facilitating secure and transparent transactions, ensuring Shariah compliance.
RegTech Solutions	Technological solutions aiding compliance with Shariah principles and regulatory requirements.
Islamic Cryptocurrency	Shariah-compliant digital currencies designed for transactions within Islamic finance.
Ethical Screening Tools	Tools to screen investments based on Shariah guidelines to ensure ethical compliance.

Source: by the author based on (Billah, 2021)

2.2. Fintech and the green sustainability:

Fintech and the green economy are two interconnected fields that have the potential to drive sustainable development and address environmental challenges. Fintech, which refers to the integration of technology into financial services, can play a crucial role in supporting the green economy through various mechanisms and applications is by facilitating the flow of funds for environmentally friendly projects. **(Nassiry, 2018). (Tamasiga et al., 2022)** investigate the intersection between green economic growth and FinTech and find that FinTech is a promising direction in unlocking the green dilemma and provides a framework to help African countries in the transition to green economic growth. In addition, **(Arner et al., 2020)** approved that FinTech is the key driver for financial inclusion, which in turn supports sustainable development, as embodied in the UN Sustainable Development Goals (SDGs). Moreover, **(Puschmann et al., 2020)** studied green FinTech, which is the intersection of digitization and sustainability. It shows that Green FinTech has an impact along the whole value chain of financial services. Furthermore, **(Nassiry, 2018)** outlines three broad areas for the possible application of fintech to green finance: blockchain applications for sustainable development; blockchain use-cases for renewable energy, decentralized electricity market, carbon credits and climate finance; and innovation in financial instruments, including green bonds. Findings revealed that Fintech has the potential to unlock green finance technologies and help to achieve the Sustainable Development Goals (SDGs) and implement the Paris Agreement.

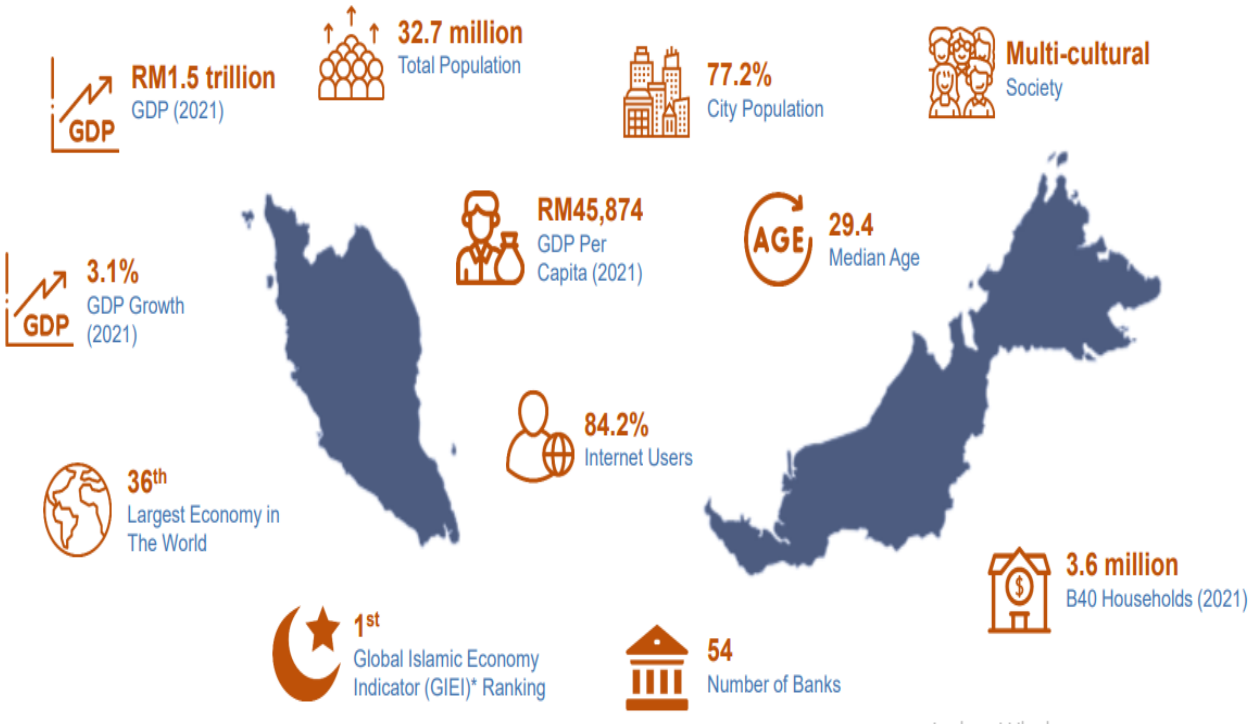
However, literature on green FinTech is still in its early stages and mostly focuses on isolated aspects of the topic.

It is worth mentioning that the impact of fintech and Islamic finance on the green economy is still an evolving field, and ongoing research and collaboration between the financial and environmental sectors are essential to fully unlock its potential. To the best of our knowledge, this is the first initiative to examine the relationship between Islamic Fintech and environmental sustainability and to quantify empirically the impact of Islamic fintech tools in promoting green economy in Malaysia using advanced econometric approach.

2.3. Islamic banking sector and fintech in Malaysia:

The Islamic banking development in Malaysia was initiated by the commitment of the Malaysian government with the introduction of the Islamic Banking Act 1983 and the Government Investment Act 1983. Malaysia, a leading player in the global Islamic finance landscape, has consistently retained its first position in the Islamic Finance Development Indicator (IFDI) for ten consecutive years. According to the ICD-Refinitiv **IFDI Report 2022**, Malaysia secured the top spot in four crucial sub-categories: financial performance, governance, awareness, and sustainability. The country's vibrant Islamic finance industry saw total assets amounting to US$4 trillion in 2021, and it is anticipated to reach US$5.9 trillion by 2026. These impressive numbers highlight Malaysia's unwavering commitment to sustainable economic development and its crucial role in the growth of the Islamic finance sector worldwide. Figure 01 presents an overview about the Malaysian economy as follows.

Figure 01: Malaysia in numbers

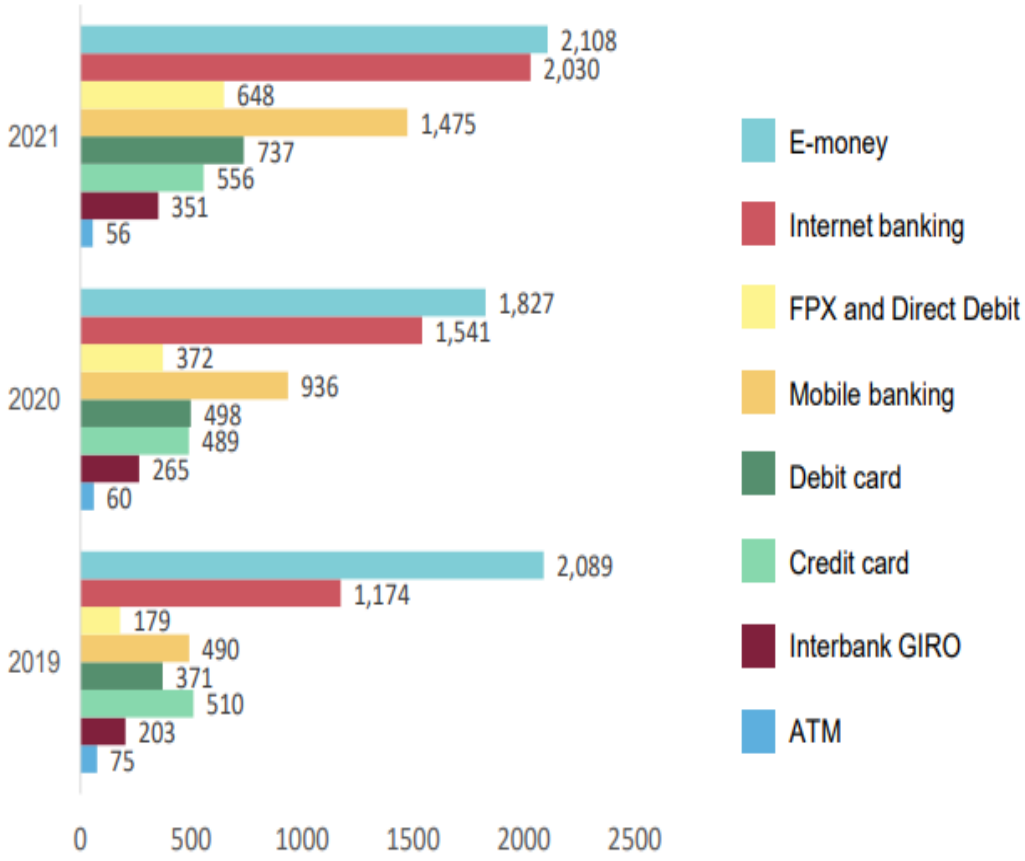


Source: IFDI 2022

In addition, Fintech in Malaysia is a thriving industry, driving innovation and accessibility in financial services. With a supportive regulatory environment and growing digital adoption, the country has seen the rise of numerous fintech startups, offering solutions in digital payments, lending, remittances, and more. The collaboration between fintech firms and traditional financial institutions has further boosted fintech growth, enhancing financial inclusion and positioning Malaysia as a leading fintech hub in Southeast Asia.

According to **Malaysia fintech report 2022**, the average number of e-wallet payment transactions per capita exceeds pre-COVID level at 64.5 in 2021 where over 7.2 billion transactions were made with electronic payment (e-payment) channels in Malaysia, growing 30% year-on-year. Digital payments use and acceptance in Malaysia have risen significantly over the past decade, but this cashless revolution truly went mainstream during the Covid-19 pandemic.

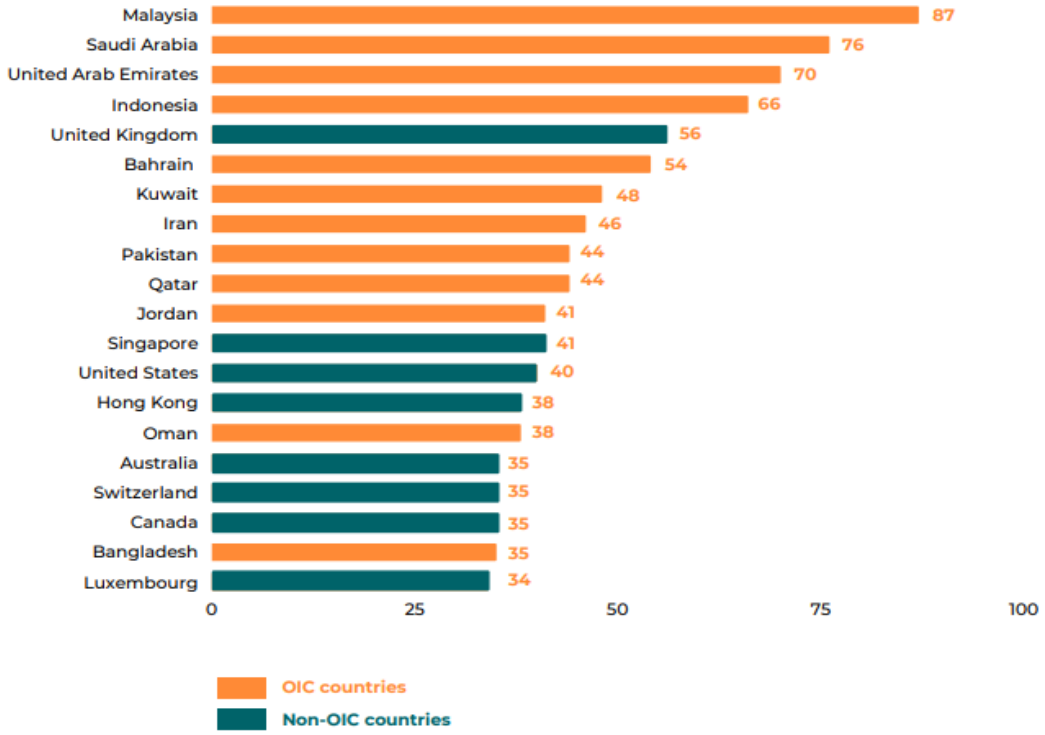
Figure 02: fintech transaction volume in Malaysia (in million)



Source: Bank of Negara Malaysia

Moreover, Malaysia has been regarded as the leading hub for Islamic financial technology. According to the GIFT Report 2021, it has been one of the most prominent countries in the world when it comes to the development and regulation of Islamic financial technology. Besides being able to provide high-quality Islamic financial services, Malaysia also has a robust infrastructure and regulatory framework.

Figure 02: Top 20 Countries by Global Islamic Fintech (GIFT) Index Scores

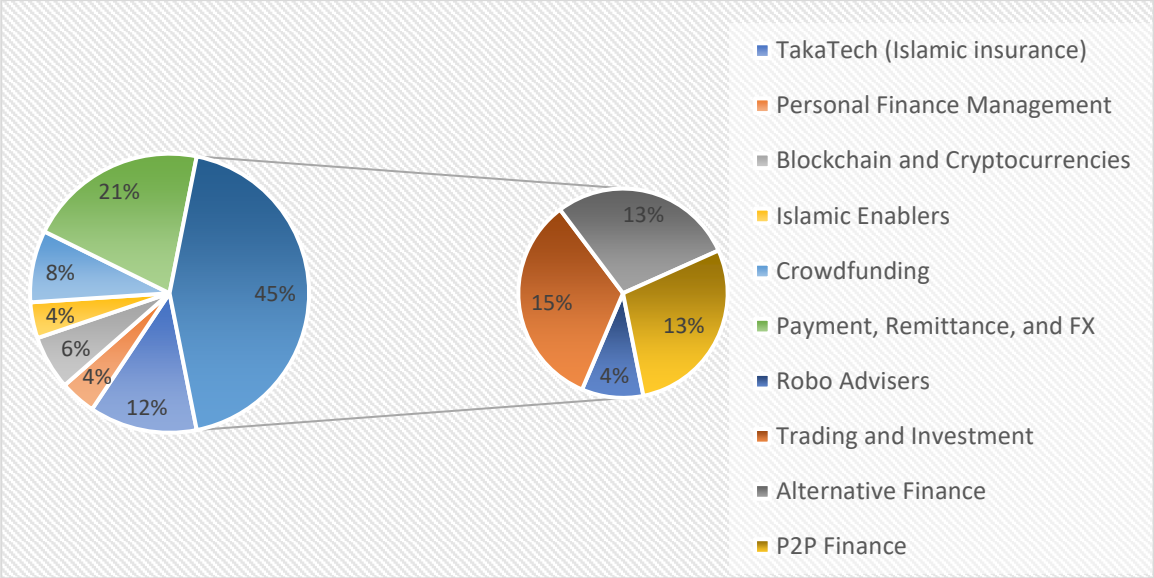


Source: GIFT, 2021

Highlighting the promising outlook of Islamic Fintech in Malaysia, it is noteworthy that Kuala Lumpur hosts approximately one-third (33%) of the global Islamic Fintech companies, as reported in 2022 by Dr Bakar, Chairman of the BNM and SC Shariah Advisory Council during the Islamic Fintech leaders' Summit 2022. This concentration of Islamic Fintech companies in Kuala Lumpur reflects the city's role as a thriving hub for innovative and Shariah-compliant financial technologies.

In this facilitative ecosystem, the emergence of 48 Halal Fintech companies across diverse business sectors and varying stages of maturity has been observed, as indicated in MDEC's 2022 Islamic Fintech Dialogue Report. These Halal Fintechs encompass a range of services presented in figure 03 and table 02

Figure 03: the share of Islamic fintech companies in Malaysia



Source: by the author

Figure 03 provides a clear overview of the various business sectors in which Halal Fintech companies operate and the number of companies in each sector. Additionally, table 02 highlights the names of the Halal Fintech companies that are already active in the industry, contributing to Malaysia's thriving Islamic Fintech ecosystem

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Table 02: Active Islamic fintech companies

Business Sector	Halal Fintech
Blockchain Solutions	Finterra
P2P Micro-financing	microLEAP
Buy Now Pay Later (BNPL)	PayHalal
Supply Chain Financing	CapBay
Ethical Investment	Ethis

Source : MDEC's 2022 Islamic Fintech Dialogue Report

3. Data and methodology:

3.1. Data description:

The dataset employed in this study encompasses annual observations from 2006 to 2022, focusing on essential variables concerning Fintech, Islamic finance, and green sustainability within Malaysia. The data was sourced from reputable repositories, including Bank Negara Malaysia statistics, Capital IQ, and the Organization for Economic Co-operation and Development (OECD). Table 03 below provides a comprehensive overview of the variables used in the analysis.

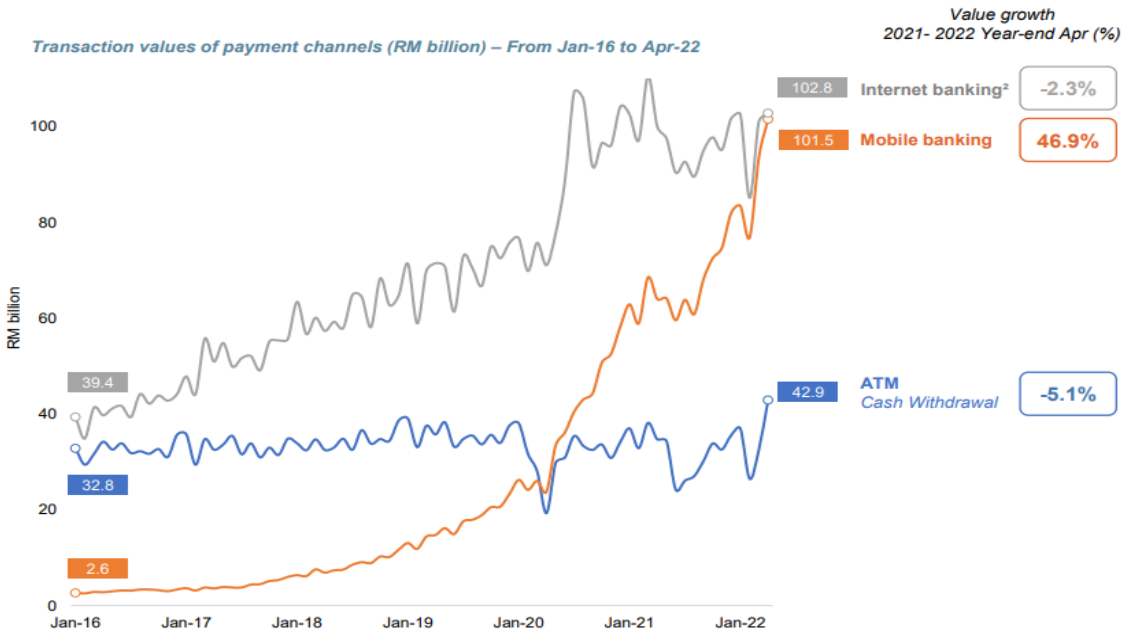
Table 03: the variables' description

Sector	Variable		Description
Fintech	Automated Teller Machine	ATM	Adoption and usage of Automated Teller Machines.
	Mobile banking	Mban	Utilization of mobile banking services.
Islamic Finance	Islamic Banking Credit	IBC	Total credit extended by Islamic banks in Malaysia.
Green Sustainability	CO2 Emission	CO2	Carbon dioxide emissions in the country.
	Renewable Electricity	RenwElec.	Proportion of electricity generated from renewable sources.
Control variable	GDP	GDP	Gross Domestic product

Source: by the author

Figure **04** illustrates the transaction value of various digital payment channels from January 2018 to April 2022. Notably, we observe a substantial surge in mobile banking transactions in 2022 compared to 2021, with a remarkable growth rate of 46.9%. Conversely, internet banking and ATM cash withdrawal transactions experienced a decline in 2022, showing reductions of 2.3% and 5.1%, respectively, when compared to the previous year. This trend indicates a notable shift towards mobile banking as the preferred payment channel, reflecting the evolving consumer preferences and digital adoption in the financial sector in Malaysia.

Figure 04: transaction values of digital payment channels in Malaysia



Source: Bank Negara Malaysia

3.2. Methodology: Bayesian Vector Autoregression (VAR)

To comprehensively quantify the dynamic relationships among Fintech, Islamic finance, and their potential impact on green sustainability in Malaysia, we employ a Bayesian Vector Autoregression (VAR) model. The VAR model is a technique that allows for simultaneous estimation of interdependencies between multiple variables over time while the Bayesian approach facilitates the integration of prior knowledge into our model, ensuring robustness and adaptability. According to **(Ciccarelli & Rebucci, 2003)** and **(Tsagkanos et al., 2022)**

The general equation of the vector autoregressive model is presented as follow **(Ciccarelli & Rebucci, 2003)**:

$$Y_t = A_1 X_{t-1} + A_2 X_{t-2} + \cdots + A_p X_{t-p} + \epsilon_t \ldots (1)$$

Where

- Yt is a vector of endogenous variables.
- Xt is a matrix for a set of independent variables.
- Ai are the matrices of coefficients.
- P is the order of the VAR model.
- ϵ_t is a vector of error terms.

In Bayesian VAR estimation, the model parameters are treated as random variables with priors such as Litterman/Minnesota prior, Normal-Wishart prior, Sims-Zha normal-Wishart prior and Sims-Zha normal-flat **(Evans & Alenoghena, 2017)**. The posterior distribution can be approximated using Markov Chain Monte Carlo (MCMC) methods, such as Gibbs sampling or Metropolis-Hastings algorithm.

This advanced methodology enables us to unravel the complex dynamics and policy implications of these sectors, providing valuable insights for fostering an environmentally sustainable and inclusive financial ecosystem in Malaysia.

4. Results and discussion

4.1. Unit root test:

ADF test is commonly used in time series analysis to check for the presence of a unit root in a time series It is also used in pairs trading to check the co-integration between two stocks. If there is a unit root present in the time series, it implies that the time series is non-stationary and the stocks are not co-integrated.**(Prabhakaran, 2020)**

Table 04: ADF results

variables	ADF with Constant		
	Level	**1st difference**	**Decision**
ATM	0.9287	0.0041	I (1)
Mobile banking	0.9970	0.0212	I (1)
IBC	0.9765	0.0413	I (1)
CO2 emission	0.9813	0.0003	I (0)
Renewable elec	0.8762	0.0498	I (1)
GDP	0.8500	0.0041	I (1)

Source: data processing

Table (04) revealed that that all study variables are non-stationary at level, indicating the presence of trends over time. To ensure reliable analysis, we will transform the variables into stationary form by taking their first differences. This step allows for accurate modeling and understanding of their relationships and impact on sustainable economic development in Malaysia.

4.2. Johansen cointegration test:

the purpose of the Johansen cointegration test is to identify the presence of cointegrating relationships between several non-stationary time series data and to estimate the number of relationships between the variables.

Table 05: Johansen cointegration results

Johansen test			
Hypothesized	**Eigenvalue**	**Trace statistics**	**Probabilities**
None	*0.583123*	*67.7438*	*0.0512*
At most one	*0.977433*	*80.3309*	*0.1896*
At most two	*0.824177*	*74.82178*	*0.1489*
At most three	*0.619580*	*48.21726*	*0.5490*

Source: data processing

The Johansen cointegration test results show that no long-term equilibrium relationship exists

among the variables. They are not cointegrated, meaning their movements are independent and not connected in the long run.

4.3. Bayesian VAR estimation:

The next crucial step in our analysis involves employing Bayesian estimation to model the relationships and dynamics among the variables. By using Bayesian methods, we can integrate prior knowledge, effectively handle uncertainties, and draw more accurate and reliable conclusions. This approach will enable us to quantify the impact of Fintech, Islamic finance, and green sustainability on sustainable economic development in Malaysia while considering their interdependencies. Additionally, Bayesian estimation enhances our understanding of parameter uncertainty, offering policymakers valuable insights for making informed decisions in a complex economic environment.

Table 06: Bayesian VAR estimation results

Bayesian VAR estimates						
	ATM	**Mban**	**IBC**	**CO2**	**RenwElec**	**GDP**
ATM	*0.989533*	*0.072335*	*3.17114*	*-0.006579*	*1.877301*	*1.03151*
	(0.04220)	*(9.64083)*	*(0.0360)*	*(0.04753)*	*(0.01544)*	*(0.64557)*
Mban	*-0.000252*	*0.096733*	*-0.094149*	*-0.000260*	*0.000532*	*-0.000337*
	(0.00029)	*(0.06851)*	*(0.04540)*	*(0.00095)*	*(0.00085)*	*(0.02014)*
IBC	*-0.000343*	*0.014979*	*0.966493*	*-0.000037*	*0.000086*	*-0.008503*
	(0.00054)	*(0.00552)*	*(0.08580)*	*(0.00018)*	*(0.000016)*	*(0.03779)*
CO2	*0.000716*	*4.611577*	*0.432920*	*1.957358*	*0.000723*	*-1.171426*
	(0.02038)	*(0.09485)*	*(0.00053)*	*(0.09750)*	*(0.00870)*	*(0.57016)*
RenwElect	*0.221329*	*-0.008028*	*-0.846714*	*0.014199*	*0.983085*	*0.368120*
	(0.09186)	*(0.99672)*	*(0.32798)*	*(0.95357)*	*(0.09136)*	*(0.66171)*
GDPc	*9.59177*	*-0.001202*	*0.896606*	*0.542747*	*0.244083*	*0.237368*
	(1.00991)	*(0.99744)*	*(0.09774)*	*(0.36412)*	*(0.32750)*	*(0.77958)*
R-squared	*0.995908*	*0.976107*	*0.980600*	*0.919638*	*0.919638*	*0.863164*
F-statistic	*343.7075*	*30.12557*	*83.80284*	*33.19919*	*44.48514*	*9.420279*

Source : data processing

The results of the Bayesian estimation presented in table 06 demonstrate the potential of Fintech and Islamic banking in driving sustainable economic development in Malaysia.

Firstly, we observed a significant and negative effect of both Fintechs, namely ATM and mobile banking, as well as Islamic banking credit on CO2 emissions. This suggests that as these

financial technologies and Islamic banking activities increase, there is a corresponding reduction in CO2 emissions. This outcome highlights the potential of Fintech and Islamic finance in contributing to green sustainability efforts, aligning with Malaysia's commitment to promote eco-friendly economic development.

Secondly, the analysis revealed a positive and significant impact of both Fintechs (ATM and mobile banking) and Islamic banking credit on renewable energy generation. This indicates that as Fintech usage and Islamic banking credit increase, there is a corresponding boost in renewable energy generation. This finding showcases the positive role of Fintech and Islamic finance in supporting and promoting renewable energy initiatives, which are essential for sustainable economic growth.

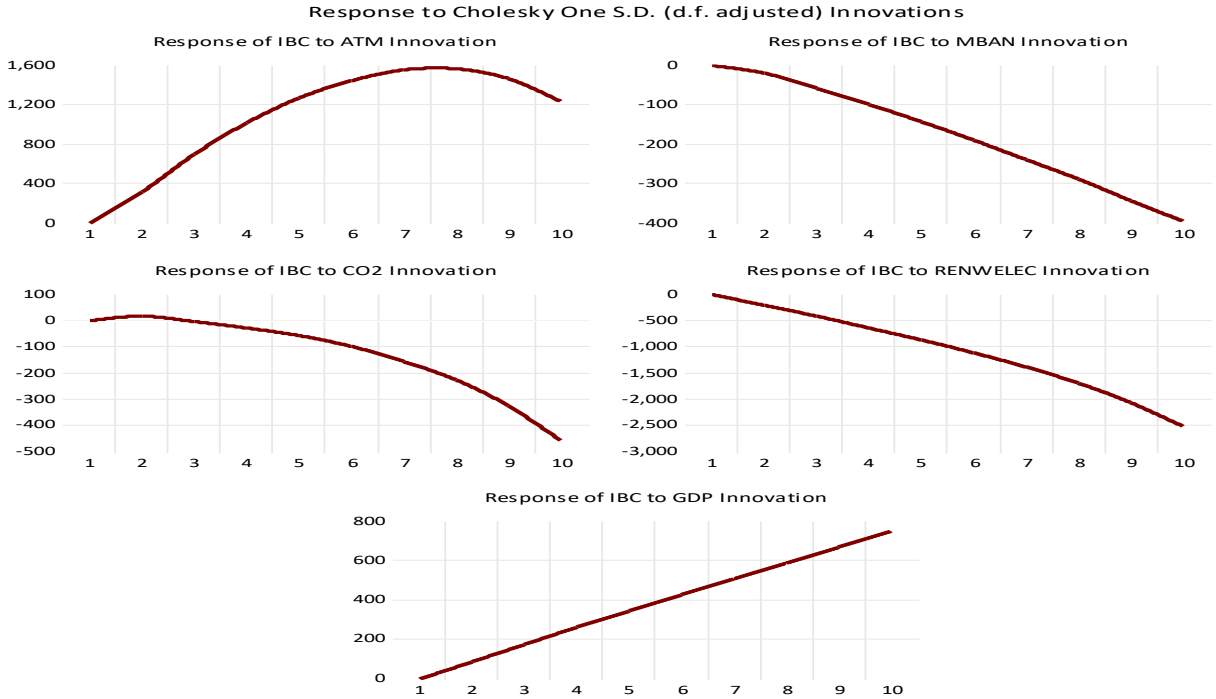
Furthermore, we observed a positive and significant impact of ATM on Islamic banking credit, while, mobile banking had a negative impact on Islamic banking credit, suggesting that as mobile banking usage rises, there is a slight reduction in Islamic banking credit. This nuanced relationship underscores the importance of exploring the interplay between different financial technologies in shaping Islamic banking credit dynamics.

4.4. Bayesian impulse response functions

The next step involves utilizing Bayesian Impulse Response Functions (IRFs) to examine how specific shocks or innovations in Fintech, Islamic banking, and green sustainability variables affect the entire system over time.

- **Response of Islamic banking credit**

Figure 05: the response of Islamic banking credit

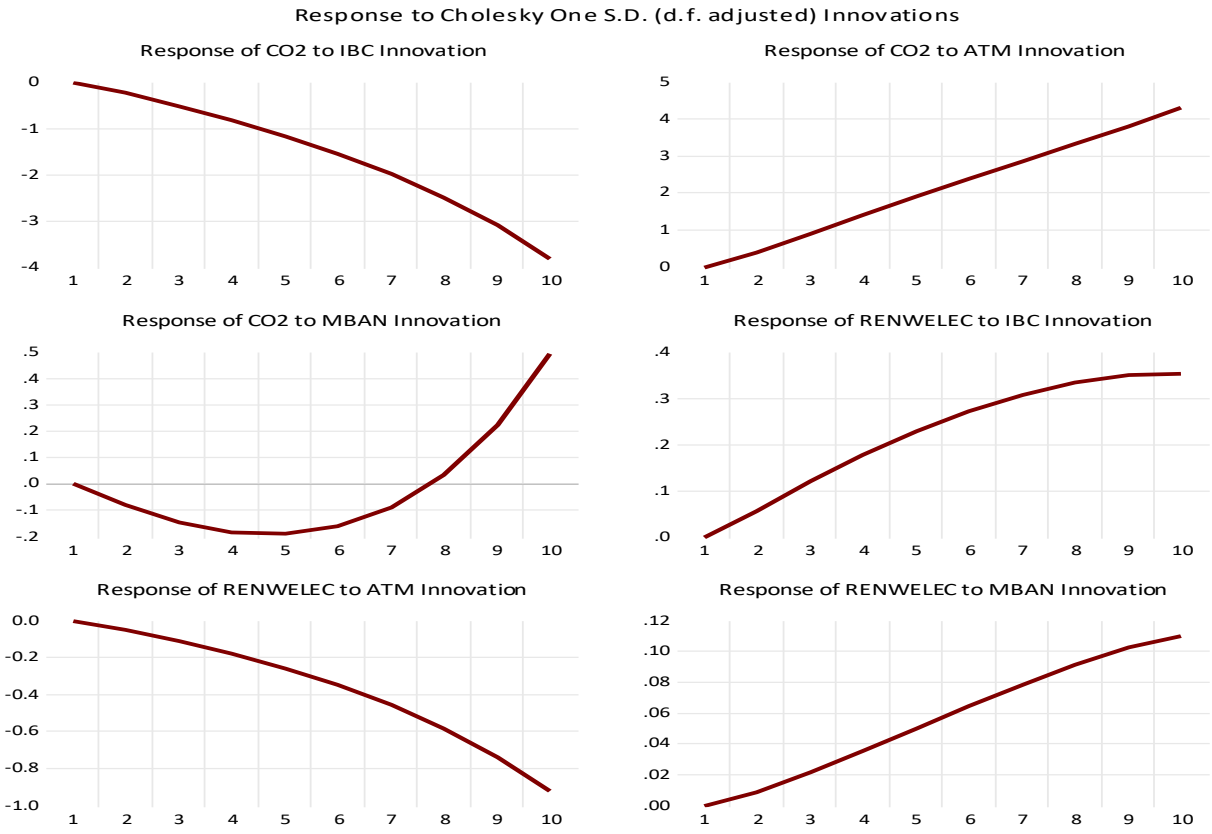


Source : data processing

The Bayesian Impulse Response Functions (IRFs) reveal intriguing insights on the response of Islamic banking credit to various shocks. Figure **05** showed that mobile banking shocks lead to a negative impact, potentially diverting credit demand from Islamic banking. ATM shocks initially boost credit positively until t=7, but later, the effect diminishes. Renewable electricity and CO2 emission shocks both negatively affect Islamic banking credit, posing challenges in adapting to environmental changes. However, GDP shocks positively influence credit, indicating increased demand during economic growth.

Response of the green sector to Islamic banking and fintech innovations

Figure 06: IRFs of CO2 and renewable electricity



Source: data processing

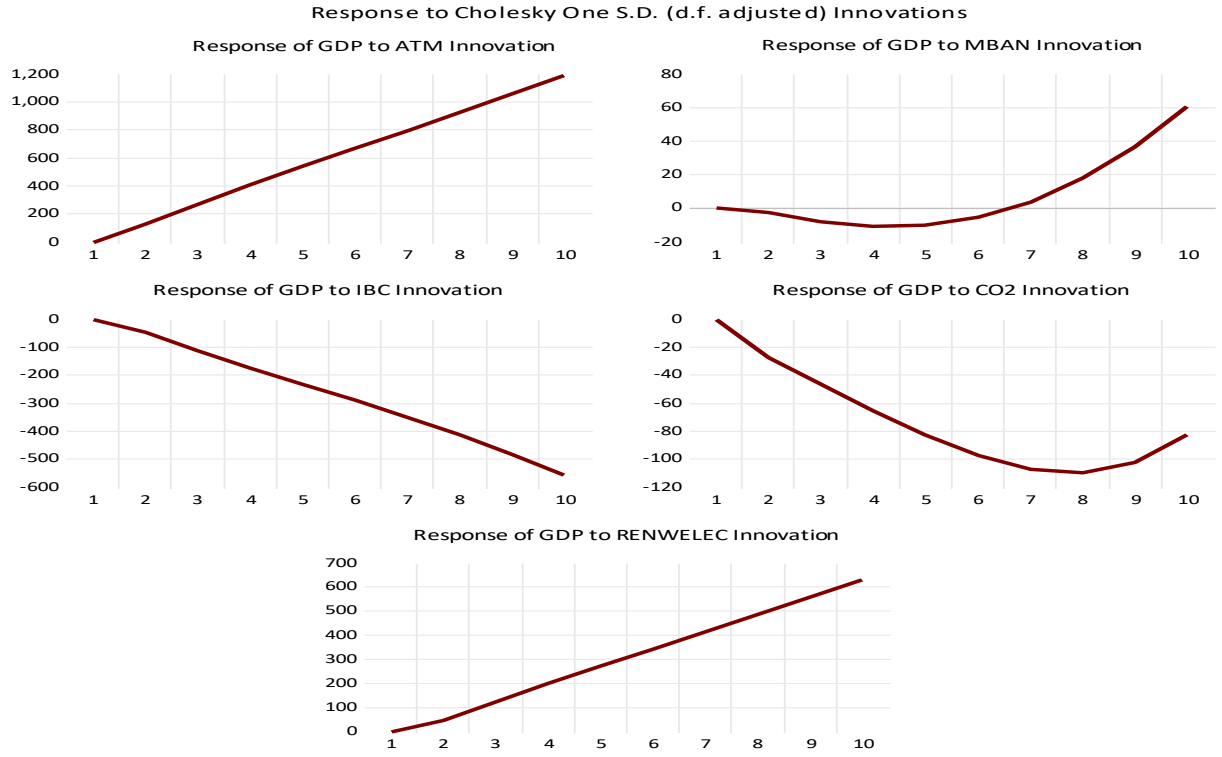
The responses of the green sector to various shocks are presented in figure 06 indicating that Islamic Banking Credit (IBC) shocks, lead to reduced CO2 emissions. This finding suggests that an increase in Islamic banking credit is associated with a decrease in carbon emissions, indicating a positive impact on environmental sustainability. In addition, It demonstrates a positive response to ATM shocks and initially a negative response to mobile banking until t=7, after which it turns positive. While **Renewable Electricity** responds positively to Islamic Banking Credit (IBC) shocks, indicating that an increase in Islamic banking credit fosters the development of renewable electricity generation. On the other hand, it shows a negative response to ATM shocks, suggesting that ATM

innovations might hinder the growth of renewable electricity. However, the response turns positive for mobile banking shocks, indicating that in the long term, mobile banking innovations have a positive effect on renewable electricity generation.

- **Response of GDP**

The responses of GDP to various shocks are presented in figure 07. It shows that GDP exhibits a negative response to Islamic Banking Credit (IBC) shocks, implying a dampening effect on economic growth. On the other hand, GDP responds positively to ATM shocks, indicating a favorable impact on economic expansion. For mobile banking shocks, GDP initially responds negatively until t=6 but turns positive after that, indicating a short-term adverse impact followed by positive contributions to economic growth. Additionally, GDP responds negatively to CO2 emission shocks, underscoring the importance of mitigating carbon emissions for sustainable economic development. Conversely, GDP demonstrates a positive response to shocks in renewable energy, highlighting the potential of sustainable energy sources in driving economic growth.

Figure 07: IRFs of GDP



Source: data processing

4.5. Discussion:

Based on the previous results, table 07 presents a concise overview about the key relationships between Fintech, Islamic Banking, and Green Sustainability in the context of Malaysia's financial landscape.

Table: results' discussion

Relationship	*Impact*	*Explanation*
Fintech and Islamic Banking	ATM: Positive	Convenience and accessibility of ATMs may encourage customers to use Islamic banking services.
	Mobile Banking: Initially Negative, Later Positive	Mobile banking platforms may initially attract non-Islamic banking customers but adapt over time to offer more Shariah-compliant products, attracting Islamic banking customers.
Fintech and Green Sustainability	ATM: Negative	The convenience and accessibility of ATMs may reduce the need for physical processes, thus lowering carbon emissions.
	Mobile Banking: Negative	Mobile banking's digital transactions may contribute to reduced carbon emissions over traditional banking practices.
	Islamic Banking Credit: Negative	Ethical and sustainable finance practices in Islamic banking can lead to lower carbon emissions.

Source: by the author

– **Impact of fintech on Islamic Banking:** The convenience and accessibility of ATMs make it easier for customers to access their funds and conduct banking transactions. This enhanced convenience encourages customers, including those seeking Islamic banking services, while mobile banking platforms may initially attract non-Islamic banking customers due to their user-friendly interfaces and innovative features. As these platforms evolve and adapt to offer more Shariah-compliant products and services, they become attractive to Islamic banking customers. These results align with **(Dawood et al., 2022; Rabbani & Khan, 2020).**

–**Impact of Fintech on green sustainability:** in line with **(Muganyi et al., 2021; Yan et al., 2022)** findings showed that ATM and mobile banking are digital channels that enable cashless transactions, reducing the need for paper-based processes and physical bank visits. The adoption of these fintech channels helps to lower carbon emissions associated with traditional banking practices, leading to a negative impact on CO2 emissions.

–**Impact of Islamic Banking Credit on green sustainability:** Islamic banking principles prioritize ethical and sustainable investments, which often align with environmentally friendly initiatives. By promoting environmentally responsible practices, Islamic banking credit contributes to a reduction in carbon emissions, resulting in a negative impact on CO2 emissions. The findings agree with **(Bukhari et al., 2019; Julia & Kassim, 2019)**.

Finally, together, Fintech and Islamic banking can catalyze green growth by channeling resources towards renewable energy, reducing CO2 emissions, and promoting sustainable business practices. The synergistic relationship between these domains exemplifies a path towards a more inclusive, environmentally conscious, and economically sustainable future.

5. Conclusion:

This study illuminates the transformative potential of Fintech and Islamic finance in propelling sustainable economic development in Malaysia. The results reveal that Fintech, represented by ATM and mobile banking, plays a pivotal role in invigorating Islamic banking credit and influencing green sustainability practices. The positive impact of Fintech on Islamic banking credit underscores its crucial role in fostering financial inclusion and accessibility. Additionally, the negative impact of Fintech on CO2 emissions highlights its contribution to environmentally responsible banking practices. Embracing Green Sustainability and integrating it with Islamic finance principles further reinforces the commitment towards a greener and more sustainable financial ecosystem. The findings of this research emphasize the significance of harnessing the power of Fintech and Islamic finance as key drivers of green growth in Malaysia.

Policymakers and financial institutions should recognize the potential of digital transformation and sustainable finance practices in nurturing economic growth while ensuring environmental preservation. This study paves the way for further exploration, advocating for more comprehensive investigations and advanced econometric models to deepen our understanding of the intricate relationship between Fintech, Islamic finance, and green sustainability.

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