

# Study on the market potential of digital sukuk and online trading platforms

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Darmawan Darmawan

*Department of Islamic Finance Management, Universitas Islam Negeri Sunan Kalijaga, Yogyakarta, Indonesia, and*

Wansisca Putri Anggraini

*Department of Islamic Finance, Universitas Islam Negeri Sunan Kalijaga, Yogyakarta, Indonesia*

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## Abstract

**Purpose** – The purpose of this study is to examine the growth potential of Indonesia’s digital sukuk market by analyzing the roles of behavioral and technological drivers (product innovation, online trading platforms (OTPs) and public trust) and the moderating influence of institutional factors, including economic uncertainty and regulation.

**Design/methodology/approach** – A quantitative, explanatory research design was used, using survey data from 320 respondents, comprising investors, issuers and users of OTPs. The model was tested through Partial Least Squares Structural Equation Modelling with SmartPLS 4, evaluating six main effects and six moderating paths.

**Findings** – The results of this study indicate that OTPs and product innovation significantly drive digital sukuk growth, with online platforms emerging as the strongest determinant. Public trust does not exhibit a direct effect. Economic uncertainty weakens the impact of product innovation while marginally strengthening the role of online platforms. Regulatory support significantly amplifies the effect of product innovation but does not moderate other relationships. The model demonstrates strong explanatory power.

**Research limitations/implications** – This study relies on cross-sectional and perceptual data from a single country, which may limit generalizability and causal inference. Nevertheless, the findings clarify boundary conditions for technology adoption theories in Islamic finance under varying regulatory and macroeconomic environments.

**Practical implications** – Policymakers and regulators should prioritize robust digital trading infrastructure alongside supportive regulatory frameworks for sukuk innovation. Issuers and platform providers are advised to focus on platform quality, security and innovation rather than relying solely on trust-building narratives.

**Social implications** – The development of digital sukuk supported by effective platforms and regulation can enhance financial inclusion, improve Islamic financial literacy and broaden access to Shariah-compliant investment instruments.

**Originality/value** – This study develops an integrated behavioral–technological and institutional framework to explain digital sukuk growth in emerging Islamic capital markets. By embedding Technology Acceptance Model constructs within a Stimulus–Organism–Response logic and incorporating regulatory support and economic uncertainty as institutional moderators, this study extends existing theories by demonstrating how digital infrastructure and innovation translate into market growth under varying institutional conditions. The findings offer new empirical insights into the conditional role of trust and regulation during periods of digital transition and market volatility.

**Keywords** Digital sukuk, Product innovation, Online trading platforms, Public trust, Economic uncertainty, Regulation

**Paper type** Research paper



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## Introduction

The rapid advancement of digital technologies has fundamentally reshaped the global financial landscape, leading to the emergence of innovative financial services and platforms. Among these developments, Financial Technology (FinTech) has played a transformative role by integrating advanced technologies into traditional financial systems, enabling real-time, borderless and highly accessible financial transactions (Gomber *et al.*, 2017; Thomas and Hedrick-Wong, 2019). This transformation not only enhances operational efficiency but also creates new opportunities for financial inclusion and investment, particularly in emerging economies where digital infrastructure is expanding rapidly (Taherdoost, 2023; Ediagbonya and Tioluwani, 2023).

FinTech has redefined the way individuals and institutions access financial services by introducing digital platforms that facilitate payments, lending, investments and asset management with increased speed and reduced cost (Chishti, 2016; Gomber *et al.*, 2017). This innovation has lowered traditional barriers to entry and expanded financial access to underserved populations, thereby enhancing financial inclusion (Thomas and Hedrick-Wong, 2019). In the Islamic finance domain, recent studies highlight the growing role of fintech in crowdfunding, peer-to-peer lending and blockchain-based sukuk issuance (Alshater *et al.*, 2022; Thaker *et al.*, 2022). Yet, research on digital sukuk through trading platforms remains scarce.

In Muslim-majority countries like Indonesia, the integration of technology into Islamic financial markets is still in its early stages of development. Despite having the largest Muslim population globally, Indonesia's Islamic finance penetration remains below 10% of total financial assets (OJK, 2023), highlighting a significant gap between potential and actual adoption. The Sharia-compliant capital market, which encompasses mutual funds, Islamic equities and sukuk, has witnessed gradual progress over the past two decades; however, digital innovation remains limited, particularly in investment platforms. This progress creates both a challenge and an opportunity: how can financial technologies, such as online trading platforms (OTPs), accelerate the growth of Sharia-compliant instruments like sukuk in underdeveloped Islamic capital markets?

Sukuk has emerged as a prominent Islamic financial instrument with increasing global acceptance, in not only Muslim-majority nations but also jurisdictions with Muslim minorities seeking to diversify their investment offerings (Corteleszi, 2022). Comparative evidence shows that the sukuk market in the Gulf Cooperation Council (GCC) countries and Malaysia has been more advanced because of strong regulatory support and digital integration, while jurisdictions such as the UK have positioned sukuk within global financial hubs (Alam *et al.*, 2017; Nomran *et al.*, 2025). However, the Indonesian context lags in leveraging technology to scale sukuk issuance and distribution (Qizam and Fong, 2019). Although digital transformation has begun to reshape various financial instruments, academic research on the intersection between sukuk and financial technology, particularly through OTPs, remains limited. This finding creates a significant research gap: unlike in Malaysia or the GCC, where regulatory clarity supports sukuk innovation, the Indonesian case reveals the combined influence of technological infrastructure, investor trust, regulatory frameworks and product innovation.

This study aims to investigate the market potential of digital sukuk in Indonesia by examining the role of OTPs and key influencing factors, including economic uncertainty (EU), product innovation, regulatory frameworks and public trust. Drawing on relevant theories such as the Technology Acceptance Model (TAM) and Institutional Theory, the research develops a conceptual framework that connects technology adoption with the dynamics of Sharia-compliant investment instruments.

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Using a survey-based approach and structural equation modelling via Partial Least Squares (PLS), this study contributes to the growing body of literature on Islamic fintech by providing empirical insights into the digital transformation of sukuk markets in emerging economies. The findings not only advance theoretical discourse but also provide practical strategies for regulators, issuers and platform providers in developing a resilient digital sukuk ecosystem.

### Literature review

This study builds on three complementary theoretical perspectives. First, the TAM (Davis, 1989; Venkatesh and Davis, 2000) explains individual adoption behavior through perceived usefulness and ease of use, which justifies the central role of OTPs and technology-driven product innovation in driving digital sukuk adoption. Second, Institutional Theory (North, 1990 and Scott, 2005) highlights how formal institutions (regulation) and environmental conditions (EU) create coercive and normative pressures that shape market behavior and condition the effectiveness of innovation. Third, the Stimulus–Organism–Response (S-O-R) framework (Mehrabian and Russell, 1974) supports our measurement choice (stimulus-response style items) by conceptualizing how external stimuli (innovation, platforms, regulatory signals and uncertainty) affect internal states (trust and perceived utility) and, ultimately, behavioral response (sukuk market growth). Integrating TAM, Institutional Theory and S-O-R allows the model to capture micro (individual/behavioral), meso (platform/infrastructure) and macro (institutional) mechanisms that jointly determine digital sukuk adoption (Russell and Mehrabian, 1977).

#### *Product innovation and digital sukuk growth*

Innovation in sukuk structures (such as green sukuk, perpetual sukuk and blockchain-enabled instruments) broadens investor segments and enhances market appeal (Safari *et al.*, 2014). Within the TAM framework, innovative products increase perceived usefulness, which motivates adoption. At the same time, Maqasid al-Shari'ah requires that innovation maintain fairness, risk-sharing and social justice (Akram Laldin and Furqani, 2013). The digitalization of sukuk is, thus, a double-edged sword: it promises efficiency and accessibility but also raises concerns regarding technological risks and Shariah compatibility (Thong, 2025):

H1. Product innovation has a significant effect on the growth of digital sukuk in Indonesia.

#### *Online trading platforms and digital sukuk growth*

OTPs reduce transaction costs, enhance transparency and democratize access, thereby fostering participation in capital markets (Qudah *et al.*, 2023; Chhabra *et al.*, 2025). In Islamic contexts, OTPs are particularly important because they enable real-time Shariah screening, blockchain-based smart contracts and fatwa-backed compliance engines (Iftikhar and Saba, 2020). Evidence from Wahed Invest and EthisCrowd suggests that digital platforms expand inclusion by attracting retail investors and lowering entry barriers. TAM highlights that ease of use and accessibility are central to adoption:

H2. Online trading platforms significantly influence the growth of digital sukuk in Indonesia.

*Public trust and digital sukuk growth*

Trust is a cornerstone of Islamic finance, encompassing Shariah governance, regulatory integrity and issuer credibility. Empirical studies show that trust significantly influences Shariah-compliant investment decisions (Kholid, 2022; Basyariah *et al.*, 2021). Institutional theory also underlines that legitimacy and social trust are prerequisites for sustained adoption in new markets (Scott, 2013). Without sufficient trust, technological and regulatory improvements may fail to attract investors:

H3. Public trust has a significant effect on the growth of digital sukuk in Indonesia.

*The moderating role of economic uncertainty*

Economic volatility discourages investors from committing to long-term or relatively illiquid instruments such as sukuk, especially in emerging economies (Alam *et al.*, 2017). The COVID-19 pandemic underscored both the resilience and vulnerabilities of Islamic finance, signaling that macroeconomic conditions strongly shape adoption patterns (Hassan, 2022). From an institutional lens, environmental uncertainty alters how market actors perceive innovation, platforms and trust.

Hypotheses:

H4a. Economic uncertainty moderates the relationship between product innovation and digital sukuk growth.

H4b. Economic uncertainty moderates the relationship between online trading platforms and digital sukuk growth.

H4c. Economic uncertainty moderates the relationship between public trust and digital sukuk growth.

*The moderating role of regulation*

Supportive regulation reduces compliance risk, strengthens investor confidence and legitimizes digital instruments (Hui *et al.*, 2019). Institutional theory stresses that coercive and normative pressures shape how markets adopt innovations (DiMaggio and Powell, 2000). In Islamic finance, clear regulatory frameworks and Shariah governance are fundamental, as regulatory ambiguity can undermine confidence in digital sukuk.

Hypotheses:

H5a. Regulatory support moderates the relationship between product innovation and the growth of digital sukuk.

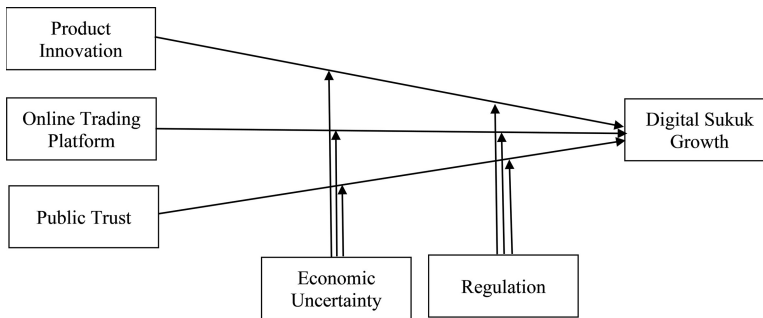
H5b. Regulatory support moderates the relationship between online trading platforms and the growth of digital sukuk.

H5c. Regulatory support moderates the relationship between public trust and the growth of digital sukuk.

The proposed research framework and hypotheses are illustrated in [Figure 1](#).

**Methodology**

This study uses a quantitative, explanatory research design to empirically examine the determinants of digital sukuk growth and the moderating role of institutional factors. A



**Figure 1.** Hypothesis framework

**Source:** Authors' own work

survey-based approach was used to collect primary data through structured questionnaires distributed to investors, issuers and users of OTPs in Indonesia.

A total of 320 valid responses were collected through both online distribution and field-based engagement. The sampling method used was purposive sampling, targeting individuals with knowledge or experience in Sharia-compliant financial products, particularly sukuk investments. While purposive sampling restricts generalizability, it is justified in this study because the research focuses on a specialized population that cannot be easily captured using probabilistic techniques. This approach ensures that the data are collected from respondents who are most relevant to the research context.

The questionnaire items were developed based on prior studies and refined through expert validation to ensure construct relevance and content clarity. All measurement items used a five-point Likert scale, with adjustments based on the nature of each construct. Items related to drivers and barriers (EU, product innovation, regulation and public trust) were measured using a stimulus-response format (from “Strongly Inhibiting” to “Strongly Encouraging”) to capture investor sentiment. Items related to online platform use and digital sukuk growth were measured using agreement-based scales.

The data were analyzed using Structural Equation Modelling, Partial Least Squares with the aid of SmartPLS 4.0 software. Compared to covariance-based SEM (AMOS), Partial Least Squares Structural Equation Modelling is more appropriate for prediction-oriented research, does not impose strict normality assumptions and can simultaneously handle formative and reflective constructs (Hair *et al.*, 2022). To further validate the results, the analysis was complemented with consistent PLS (PLSc) estimation, which yielded findings consistent with the standard PLS approach, thereby confirming that model specification did not bias the results. The analysis included:

- assessment of measurement model validity and reliability (construct reliability, convergent validity and discriminant validity);
- evaluation of structural model (path coefficients,  $R^2$  values and effect sizes); and
- moderation analysis to examine the role of EU and regulation in strengthening or weakening the relationships between product innovation, OTP, public trust and digital sukuk growth.

Robustness checks were conducted to strengthen confidence in the empirical results. In addition to the PLS vs PLSc comparison, an alternative model specification was tested by

removing non-significant paths. These robustness checks indicate that the findings are not dependent on a single modelling assumption.

This methodological approach ensures a rigorous empirical test of the conceptual model derived from the TAM and Institutional Theory. It provides insights relevant to Islamic fintech development in emerging markets. The operational definitions of variables and their indicators are presented in [Table 1](#).

The measurement model was evaluated using convergent and discriminant validity. All constructs met the recommended thresholds for Composite Reliability ( $CR > 0.7$ ) and Average Variance Extracted ( $AVE > 0.5$ ). Discriminant validity was also confirmed using the Fornell–Larcker criterion. Standard method bias was assessed using Harman’s single-factor test and found to be non-significant.

To assess common method bias, this study applied Harman’s single-factor test and the full collinearity variance inflation factor approach following [Kock \(2015\)](#). The results indicate that no single factor accounted for the majority of the variance. Furthermore, the highest variance inflation factor across all constructs was 2.763, which is below the recommended threshold of 3.3, suggesting that common method bias is unlikely to pose a serious concern in this study. The respondent comparison was performed by splitting the sample into early responders (first 33%) and late responders (last 33%) and comparing key construct means; no significant differences were found (*t*-tests,  $p > 0.10$ ), suggesting limited non-response bias.

## Results and discussion

### *Data analysis results*

*Respondent profile.* A total of 320 valid respondents participated in the survey. The majority of respondents were female (54.4%), with the largest age group being those between 20 and 30 years old (49.4%). Most participants had completed high school or its equivalent (43.8%), followed by those with bachelor’s degrees (34.4%). In terms of regional distribution, 53.8% were from Java Island, while 46.3% were from outside Java. Respondents represented a diverse mix of backgrounds, comprising sukuk investors (43.1%), OTP users (38.8%) and sukuk issuers (18.1%). The demographic characteristics of respondents are summarized in [Table 2](#).

*Outer model.* The outer model testing in this study focuses on the relationship between each indicator and the research variables. The outer model analysis is conducted to ensure that the measurements used are appropriate. The outer model consists of measurement models, including indicators and the paths connecting them to their respective factors. The measurement model assessed in this study is presented in [Figure 2](#).

The outer model results indicate that most indicators load firmly on their respective constructs, with standardized loadings above 0.70. A few items (OTP4 = 0.719 and OTP5 = 0.726) were slightly lower but retained, as the constructs still satisfied the reliability and validity thresholds. Composite reliability (CR) values for all constructs exceeded 0.70, and average variance extracted (AVE) values were above 0.50, confirming convergent validity. Discriminant validity was established through the Fornell–Larcker criterion and HTMT ratios ( $< 0.90$ ). These results confirm that the measurement model is reliable and valid for further structural analysis.

*Validity test.* The validity test was assessed through outer loadings and AVE. Indicators with outer loadings above 0.70 were considered strong, while those between 0.60 and 0.70 were retained if the construct AVE remained above 0.50. One indicator (DSG5, loading = 0.643) was dropped to improve the measurement model. The remaining indicators exhibited satisfactory outer loadings (most  $> 0.70$ ), with OTP4 (0.720) and OTP5 (0.726) being

**Table 1.** Operational definition of variables

Variable	Definition	Indicators
Product innovation (PI)	Perceived novelty and appeal of sukuk products because of innovation, sustainability and technological features	<p>PI1. Digital sukuk volume promises market potential (Tidd and Bessant, 2020)</p> <p>PI2. The growth rate of the sukuk market reflects its development potential (Basuyarlah <i>et al.</i>, 2021)</p> <p>PI3. Sukuk segmentation includes green and social sukuk (Smaoui and Nechi, 2017)</p> <p>PI4. Blockchain adoption enhances efficiency and transparency (Tapscott and Tapscott, 2018)</p>
Online trading platform (OTP)	User perception of the functionality, security and usability of online sukuk trading platforms	<p>OTP1. Platform functions and features provide a rich trading experience (Davis, 1989; Venkatesh and Davis, 2000)</p> <p>OTP2. The platform supports sukuk securitization and transactions (Zetzsche <i>et al.</i>, 2020; Muneza and Mustapha, 2021)</p> <p>OTP3. Data protection and security systems ensure user trust (Pavlou, 2003)</p> <p>OTP4. A security incident history demonstrates transparency and responsiveness (Gefen <i>et al.</i>, 2003; Kim <i>et al.</i>, 2008)</p> <p>OTP5. The user interface is easy to use and informative (Venkatesh <i>et al.</i>, 2012)</p> <p>OTP6. User experience is smooth and satisfactory (DeLone and McLean, 2003)</p> <p>OTP7. The platform matches user needs and expectations (Venkatesh <i>et al.</i>, 2003)</p> <p>OTP8. Transaction costs, liquidity and support services are satisfactory (Lee, 2009)</p> <p>OTP9. The platform leverages the latest technologies to enhance the user experience (Zetzsche <i>et al.</i>, 2020)</p> <p>OTP10. The platform adapts to new technological developments (Rogers, 2003)</p>
Public trust (PT)	Confidence in issuers, shariah compliance and the general reliability of the sukuk digital market	<p>PT1. The number of investors reflects market trust (Guiso <i>et al.</i>, 2008)</p> <p>PT2. Investor diversity indicates inclusiveness (Beck <i>et al.</i>, 2007)</p> <p>PT3. Infrastructure supports confidence in Islamic finance (Mansoor Khan and Ishaq Bhatti, 2008)</p> <p>PT4. Blockchain contributes to Islamic financial assurance (Alam <i>et al.</i>, 2019; Muneza and Mustapha, 2019)</p>

(continued)

**Table 1.** Continued

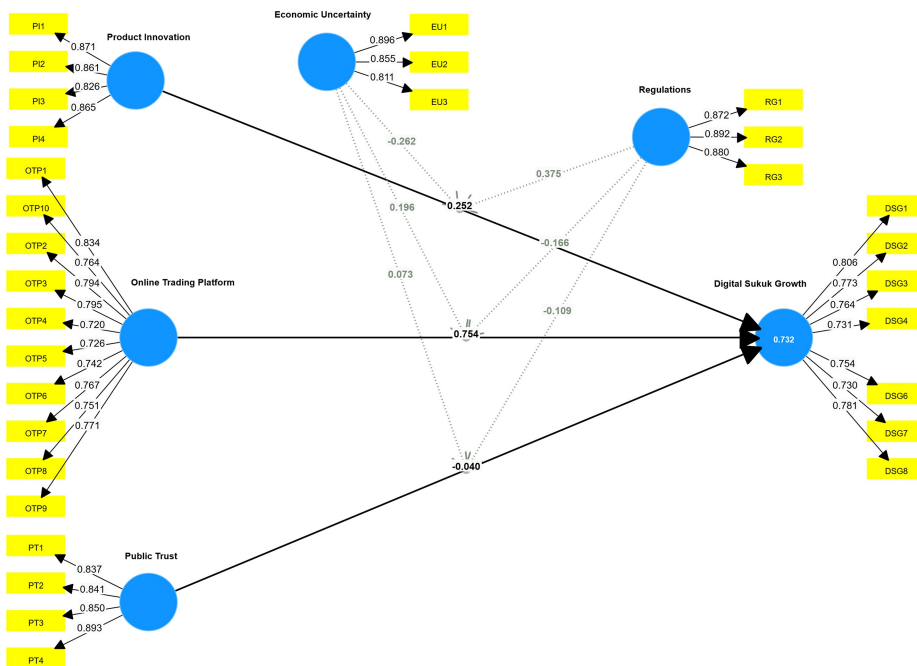
Variable	Definition	Indicators
Economic uncertainty (EU)	Perceived instability of the macroeconomic environment may inhibit or discourage sukuk investment	EU1. The digital sukuk market value is influenced by economic and technological factors (Bloom, 2009; Baker <i>et al.</i> , 2016) EU2. Investor distribution reflects sensitivity to economic conditions (Bekaert <i>et al.</i> , 2013) EU3. Investor interest reflects both potential and market uncertainty (Dixit and Pindyck, 1994)
Regulation (RG)	Clarity and supportiveness of legal and institutional frameworks regulating sukuk issuance and trading	RG1. Technological infrastructure forms a foundation for efficiency (North, 1990; Scott, 2013) RG2. Regulatory certainty is reflected in the stability of sukuk tenors (Porta <i>et al.</i> , 1998) RG3. Regulatory policies support segmented markets (e.g. green and social sukuk) (Smaoui and Nechi, 2017)
Digital sukuk growth (DSG)	Perceived progress in sukuk issuance, adoption and public trust in digital sukuk markets	DSG1. Regulatory certainty provides stability in the development of sukuk (North, 1990; Scott, 2013) DSG2. Regulatory changes support the issuance and trading of sukuk (Smaoui and Nechi, 2017) DSG3. Product innovation by issuers adds value and opportunity (Smaoui and Nechi, 2017) DSG4. Breakthrough sukuk products create investment potential (Rogers, 2003) DSG5. Economic factors (e.g. interest and inflation) influence the sukuk market (Smaoui and Nechi, 2017) DSG6. Global financial trends affect sukuk and online trading (Smaoui and Nechi, 2017) DSG7. Public trust enhances sukuk market development (Guiso <i>et al.</i> , 2008) DSG8. The issuer's and platform's reputation increases investor confidence (Fombrun, 1996)

**Source(s):** Authors' own work

**Table 2.** Respondent demographic profile

Variable	Category	Frequency	%
Gender	Male	146	45.6
	Female	174	54.4
Age	<20 years	78	24.4
	20–30 years	158	49.4
	30–40 years	70	21.9
	40–50 years	14	4.4
	50+ years	140	43.8
Education	High school/equivalent	52	16.3
	Diploma	110	34.4
	Bachelor	18	5.6
	Postgraduate	172	53.8
Region	Java island	148	46.3
	Outside java	58	18.1
Respondent type	Issuer	124	38.8
	Online trading platform user	138	43.1
	Sukuk investor	320	100
	Total		

Source(s): Authors' own work



**Figure 2.** Research model  
Source: Authors' own work

slightly lower but still acceptable. AVE values for all constructs exceeded 0.50, confirming convergent validity. Thus, the measurement model demonstrated adequate reliability and validity for further structural analysis. The results of the validity assessment are reported in [Table 3](#).

*Reliability test.* Reliability testing was carried out using Cronbach's alpha (CA) and CR. All constructs achieved CA values between 0.817 and 0.922 and CR values between 0.890 and 0.935, which are well above the recommended thresholds (CA  $\geq$  0.70; CR  $\geq$  0.70) ([Hair et al., 2022](#)). These results confirm that the measurement items exhibit internal consistency and are therefore reliable. The findings demonstrate that the research instrument is robust for further structural analysis. The reliability test results are presented in [Table 4](#).

#### *Inner model*

*R-Square.* The  $R^2$  for Digital Sukuk Growth is 0.732 (adjusted  $R^2 = 0.728$ ), indicating substantial explanatory power according to ([Chin, 1998](#)) and [Hair et al. \(2022\)](#). These results suggest that the independent variables in the model collectively explain a large proportion of

**Table 3.** Validity test

Variable	Indicator	Outer loading	Information	AVE	Information
Product innovation	PI1	0.871	Valid	0.733	Valid
	PI2	0.861	Valid		
	PI3	0.826	Valid		
	PI4	0.865	Valid		
Online trading platform	OTP1	0.834	Valid	0.588	Valid
	OTP2	0.794	Valid		
	OTP3	0.795	Valid		
	OTP4	0.720	Valid		
	OTP5	0.726	Valid		
	OTP6	0.742	Valid		
	OTP7	0.767	Valid		
	OTP8	0.751	Valid		
	OTP9	0.771	Valid		
	OTP10	0.764	Valid		
Public trust	PT1	0.837	Valid	0.732	Valid
	PT2	0.841	Valid		
	PT3	0.850	Valid		
	PT4	0.893	Valid		
Economic uncertainty	EU1	0.896	Valid	0.730	Valid
	EU2	0.855	Valid		
	EU3	0.811	Valid		
Regulations	RG1	0.872	Valid	0.777	Valid
	RG2	0.892	Valid		
	RG3	0.880	Valid		
Digital sukuk growth	DSG1	0.806	Valid	0.582	Valid
	DSG2	0.773	Valid		
	DSG3	0.764	Valid		
	DSG4	0.731	Valid		
	DSG6	0.754	Valid		
	DSG7	0.730	Valid		
	DSG8	0.781	Valid		

**Source(s):** Authors' own work

**Table 4.** Reliability test table

Variable	Cronbach's alpha	Composite reliability	Information
Product innovation	0.880	0.916	Reliable
Online trading platform	0.922	0.935	Reliable
Public trust	0.880	0.916	Reliable
Economic uncertainty	0.817	0.890	Reliable
Regulations	0.858	0.913	Reliable
Digital sukuk growth	0.880	0.907	Reliable

**Source(s):** Authors' own work

the variance in digital sukuk growth, thereby confirming the model's adequacy in capturing the determinants of sukuk market development. The  $R^2$  values for the endogenous construct are shown in [Table 5](#).

*Hypothesis testing.* Hypothesis testing is conducted by examining the values of  $t$ -statistics and  $p$ -values. A hypothesis is accepted if the  $p$ -value  $< 0.05$  and the  $t$ -statistic  $> t$  ([Table 1.97](#)). This study examines the direct and moderating effects of independent, dependent and moderating variables. In SmartPLS, hypothesis testing results can be observed through the path coefficient using a bootstrapping technique. The results of hypothesis testing are presented in [Table 6](#).

The hypothesis testing results show that two main drivers significantly influence the growth of digital sukuk: product innovation ( $\beta = 0.252$ ,  $p < 0.05$ ) and OTPs ( $\beta = 0.754$ ,

**Table 5.**  $R^2$

Construct	$R^2$	Adjusted $R^2$
Growth of digital sukuk	0.732	0.722

**Source(s):** Authors' own work

**Table 6.** Hypothesis test

Path	Coefficient ( $\beta$ )	$p$ -value	Significance	Decision
<i>Main effects</i>				
Product innovation $\rightarrow$ digital sukuk growth	0.252	0.005	**	Supported
Online trading platform $\rightarrow$ digital sukuk growth	0.754	0.000	***	Supported
Public trust $\rightarrow$ digital sukuk growth	-0.040	0.619		Not supported
<i>Moderating effects</i>				
EU $\times$ PI $\rightarrow$ digital sukuk growth	-0.262	0.033	**	Supported
EU $\times$ OTP $\rightarrow$ digital sukuk growth	0.196	0.081	*	Not supported
EU $\times$ PT $\rightarrow$ digital sukuk growth	0.073	0.530		Not supported
RG $\times$ PI $\rightarrow$ digital sukuk growth	0.375	0.006	**	Supported
RG $\times$ OTP $\rightarrow$ digital sukuk growth	-0.166	0.224		Not supported
RG $\times$ PT $\rightarrow$ digital sukuk growth	-0.109	0.399		Not supported

**Note(s):** \* significant at the 10% level ( $p < 0.10$ ); \*\* significant at the 5% level ( $p < 0.05$ ); and \*\*\* significant at the 1% level ( $p < 0.01$ )

**Source(s):** Authors' own work

$p < 0.01$ ). Among these, OTPs represent the strongest determinant, highlighting the crucial role of digital infrastructure in facilitating the expansion of the sukuk market. In contrast, public trust did not exhibit a direct effect, indicating that its role may be more contextual rather than as a primary driver.

Regarding moderating effects, three interactions were noteworthy. EU negatively moderated the relationship between product innovation and sukuk growth ( $\beta = -0.262, p < 0.05$ ), suggesting that economic instability undermines the benefits of innovative sukuk features. The interaction between EU and OTPs was marginally significant ( $\beta = 0.196, p < 0.10$ ), suggesting that digital platforms can mitigate the impact of adverse macroeconomic conditions. Most importantly, regulatory support positively moderated the effect of product innovation ( $\beta = 0.375, p < 0.01$ ), underscoring that regulatory clarity and supportive policies amplify the impact of financial innovation. Other moderation effects (EU  $\times$  PT, RG  $\times$  OTP and RG  $\times$  PT) were statistically insignificant, suggesting that these interactions do not play a decisive role in shaping digital sukuk growth.

Robustness checks were conducted using three specifications: PLS, PLSc and a trimmed model excluding non-significant direct paths. Table 7 shows that the main conclusions remain stable. Online trading platforms consistently exert the strongest positive effect on sukuk digital growth, while product innovation shows a positive impact in PLS and the trimmed specification. Regulation strengthens the effect of innovation, and EU weakens it, consistent across all estimations. The explanatory power ( $R^2 \approx 0.73$ ) is substantial and unchanged. These results confirm that our findings are robust to alternative estimation methods and model specifications.

## Discussion

This study examined the market potential of digital sukuk in Indonesia by analyzing both behavioral-technological drivers and institutional moderators. The findings highlight how OTPs and product innovation drive sukuk growth, while institutional conditions, including EU and regulatory frameworks, shape these effects.

### *Direct effects of behavioral and technological drivers*

Consistent with the TAM, OTPs emerged as the strongest determinant of digital sukuk growth ( $\beta = 0.754, p < 0.01$ ). This finding supports the TAM proposition that perceived usefulness and ease of access are critical in technology adoption. In practice, well-designed

**Table 7.** Robustness checks: PLS, PLSc and trimmed model

Relationship	PLS ( $\beta$ )	PLSc ( $\beta$ )	Trimmed PLS ( $\beta$ )	Robustness note
OTP $\rightarrow$ DSG	0.754	0.807	0.751	Stable and consistently the strongest driver across all models
PI $\rightarrow$ DSG	0.252	-0.400	0.226	Positive and significant in PLS and trimmed; PLSc shows sensitivity, but overall effect remains relevant
RG $\times$ PI $\rightarrow$ DSG	0.375	1.949	0.282	Consistently positive moderator; effect size varies, but direction is stable
EU $\times$ PI $\rightarrow$ DSG	-0.262	-0.255	-0.198	Consistently negative moderator across all models
EU $\times$ OTP $\rightarrow$ DSG	0.196	-1.364	0.201	Positive in PLS and trimmed, reversed in PLSc; overall effect remains conditional
$R^2$ (DSG)	0.732	0.732	0.731	Substantial explanatory power, unchanged across models

**Source(s):** Authors' own work

OTPs provide efficiency, transparency, and lower transaction costs, which attract both retail and institutional investors. Prior works (Muneeza and Mustapha, 2019; Abubakar and Aysan, 2023) emphasized the enabling role of Islamic fintech in expanding inclusion. This study extends that insight by empirically demonstrating that OTPs are the primary driver of sukuk adoption. This contribution reinforces the view that robust digital infrastructure is not only supportive but also foundational for Shariah-compliant capital markets.

Product innovation also showed a significant positive effect ( $\beta = 0.252$  and  $p < 0.05$ ). This finding aligns with literature on the role of financial innovation in Islamic markets, particularly the rise of green, ESG-linked and blockchain-enabled sukuk (Safari *et al.*, 2014; Ahmad, Boumaiza, Sanfilippo, and Al-Fagih, 2025). Innovation broadens investor appeal and aligns Islamic finance with the global Sustainable Development Goals (SDGs). The findings confirm that innovation enhances market depth; however, the novelty lies in demonstrating how digital and ESG-driven innovations combine to attract new investment segments in emerging markets.

By contrast, public trust did not exert a significant direct effect ( $\beta = -0.040$ ,  $p = 0.619$ ). While prior studies consistently position trust as central to Islamic finance adoption (Kholid, 2022; Bin-Nashwan *et al.*, 2022), our results suggest that in Indonesia's still-nascent digital sukuk ecosystem, trust is not yet sufficient as a standalone driver of adoption. This result indicates that structural elements (such as platform functionality and regulatory backing) may overshadow trust in early adoption stages. This result is a novel contribution, challenging the assumption of universal trust effects and suggesting that trust may operate more as a contextual or mediating factor.

To further interpret these findings, the results can be understood through the S-O-R framework. In this study, OTPs and product innovation serve as external stimuli that shape investors' cognitive and evaluative states (organism), which are reflected in their responses to perceived digital sukuk growth. The strong effect of OTP indicates that functional digital infrastructure provides immediate and tangible stimuli that facilitate adoption decisions. Conversely, the insignificant direct effect of public trust suggests that trust operates less as an independent stimulus and more as a contextual or conditional organism factor, particularly in a nascent digital sukuk ecosystem. This interpretation helps explain why structural and technological cues dominate early-stage adoption, while trust becomes salient only when institutional maturity and regulatory clarity are more firmly established.

#### *Moderating role of economic uncertainty*

The results show that EU significantly weakens the impact of product innovation on sukuk growth ( $\beta = -0.262$ ,  $p < 0.05$ ). From an Institutional Theory perspective, this reflects how macroeconomic instability constrains the effectiveness of innovation, as investors become risk-averse during periods of volatility. Prior studies (Kashif *et al.*, 2025; Mohd Roslen *et al.*, 2024) have similarly observed that uncertainty reduces the long-run impact of innovation in sukuk markets. Our findings reinforce this, but contribute by showing empirically that in Indonesia, economic shocks can neutralize the benefits of ESG-driven or blockchain-based sukuk innovation unless coupled with strong institutional safeguards.

A marginally significant moderation was found for  $EU \times OTP$  ( $\beta = 0.196$ ,  $p < 0.10$ ), suggesting that online platforms may provide relative stability during uncertain conditions. This finding aligns with (Wang *et al.*, 2011), who showed that digital platforms are perceived as more resilient during times of macroeconomic stress. The implication is that investors may perceive regulated digital platforms as safer gateways when traditional markets are unstable. This result extends the literature by positioning OTPs as buffers against macroeconomic turbulence in Islamic finance.

No moderating effect was found for  $EU \times$  Public Trust, consistent with the idea that trust is more influenced by institutional and cultural stability than by short-term macroeconomic conditions (Adil *et al.*, 2023; Qin *et al.*, 2022).

#### *Moderating role of regulation*

Regulation significantly strengthened the relationship between product innovation and sukuk growth ( $\beta = 0.375, p < 0.01$ ). This finding confirms the Institutional Theory proposition that legitimacy and regulatory clarity are crucial for translating innovation into adoption. Previous studies (Masood *et al.*, 2024; Fodol and Aslan, 2025) have highlighted that green and SDG sukuk require an enabling regulatory ecosystem. Our findings empirically validate this in the digital sukuk context, showing that regulation acts as an amplifier of innovation effectiveness.

However, regulation did not significantly moderate the effects of OTP or trust. This finding may reflect Indonesia's fragmented regulatory environment, where digital finance rules remain underdeveloped compared to markets like Malaysia or the GCC (Setiawan and Suwandaru, 2024). Thus, while regulation is critical in legitimizing new products, it is less effective in shaping platform adoption or investor sentiment at present. This gap suggests a policy recommendation: stronger, harmonized digital finance regulation is needed to unlock the full potential of digital sukuk.

#### *Contributions and implications*

This study makes several contributions to theory and practice in the field of Islamic finance. Theoretically, it extends the TAM by demonstrating that OTPs are the strongest determinant of digital sukuk growth, thereby confirming the centrality of perceived usefulness and accessibility in the adoption of technology. At the same time, the findings draw on Institutional Theory to illustrate how regulatory frameworks amplify the effectiveness of financial innovation, while EU weakens it. An additional theoretical insight arises from the insignificance of public trust as a direct driver of sukuk growth. Contrary to much of the prior literature that treats trust as universally decisive, this study suggests that in nascent markets, trust operates more as a conditional or contextual factor, dependent on governance quality and regulatory legitimacy.

Empirically, this study contributes by providing robust evidence from Indonesia, one of the world's largest Muslim-majority nations, where sukuk penetration remains limited. By integrating behavioral, technological and institutional perspectives, the analysis demonstrates how the growth of digital sukuk is shaped by not only innovation and platform design but also broader economic and regulatory conditions. This contextualized evidence enriches the global sukuk literature, which studies from the GCC and Malaysia have primarily dominated.

From a practical standpoint, the findings hold implications for regulators, issuers and platform providers. Policymakers are urged to strengthen digital regulatory frameworks to legitimize new sukuk products and enhance investor confidence. Issuers and fintech providers, meanwhile, should prioritize innovation and platform quality as the most effective strategies for market expansion, rather than relying solely on investor trust. The results guide the alignment of digital sukuk with broader sustainability agendas, particularly the SDGs, by leveraging ESG-linked product innovation within supportive regulatory frameworks.

#### **Conclusion**

This study contributes to the growing literature on Islamic fintech by empirically examining the determinants of digital sukuk growth in Indonesia, integrating behavioral, technological and institutional perspectives. The findings confirm that OTPs are the most potent enabler of sukuk adoption, followed by product innovation, thereby extending the TAM into the domain of

Shariah-compliant capital markets. By contrast, public trust did not exert a direct effect, suggesting that in nascent ecosystems, trust functions more as a conditional rather than universal factor, an insight that challenges conventional assumptions in Islamic finance research. Viewed through the S-O-R lens, these findings suggest that technological and product-based stimuli dominate early adoption. At the same time, investor trust operates as a contextual organism shaped by institutional maturity rather than as an immediate behavioral trigger.

The moderating analyses further illuminate the role of institutional conditions. EU significantly weakens the positive impact of product innovation, underscoring the fragility of investor confidence during volatile periods, while marginally enhancing the appeal of online platforms as resilient investment channels. Regulation, meanwhile, strengthens the effect of innovation on sukuk growth, confirming the centrality of Institutional Theory in legitimizing novel financial products. These findings provide nuanced evidence that innovation and digitalization alone are insufficient; they require enabling institutional frameworks to translate potential into sustainable growth.

This study advances theory by bridging TAM and Institutional Theory in the context of digital sukuk, offers empirical insights from one of the world's largest Muslim-majority markets and provides practical guidance for policymakers and industry actors. For regulators, the results highlight the need to strengthen digital finance regulation and harmonize standards to legitimize and scale sukuk innovation. For issuers and platform providers, the findings suggest prioritizing ESG-aligned product development and platform quality over relying solely on investor sentiment. Ultimately, this study underscores that the sustainable expansion of digital sukuk depends on the synergy between innovation, technology and regulation, supported by investor education and institutional trust-building.

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#### Corresponding author

Darmawan Darmawan can be contacted at: [darmawan@uin-suka.ac.id](mailto:darmawan@uin-suka.ac.id)