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Abstract

The Fourth Industrial Revolution has led to the development of Islamic FinTech innovations to meet the needs of the Muslim community. This study analyzes the factors that determine the adoption of Sharia FinTech by halal MSME owners. The study utilized an exploratory method based on an online survey of halal MSME owners with 319 samples. The PLS-SEM analysis technique was chosen to prove the research hypothesis. This research finds that variables such as religiosity, Islamic financial literacy, and perception of risk affect the intention to adopt Islamic FinTech. The UTAUT2 variable has a positive effect on knowledge of Sharia FinTech adoption, while the adoption of Islamic FinTech positively impacts the sustainability of halal MSME businesses. The study recommends strengthening the infrastructure of the Sharia FinTech system and enhancing the value of financial services for halal MSMEs. Integrating Sharia FinTech into business operations can also enhance brand image and increase the sustainable business capacity of halal MSMEs. These insights can help develop effective strategies for Islamic FinTech innovation.

Keywords: fintech, halal, open innovation, MSME, UTAUT2

Abstrak

Revolusi industri keempat telah menyebabkan berkembangnya inovasi FinTech Islami untuk memenuhi kebutuhan masyarakat muslim. Studi ini menganalisis faktor-faktor yang menentukan adopsi FinTech Syariah oleh pemilik UMKM Halal. Penelitian ini menggunakan metode eksploratif berdasarkan survei online pemilik UMKM halal dengan 319 sampel. Teknik analisis PLS-SEM dipilih untuk membuktikan hipotesis penelitian. Penelitian ini menemukan bahwa variabel seperti religiusitas, literasi keuangan Islam, dan persepsi risiko mempengaruhi niat untuk mengadopsi FinTech Islam. Variabel UTAUT2 berpengaruh positif terhadap pengetahuan adopsi FinTech Syariah, sedangkan adopsi FinTech Syariah berdampak positif terhadap keberlangsungan bisnis UMKM Halal. Kajian ini merekomendasikan penguatan infrastruktur sistem FinTech Syariah dan peningkatan nilai layanan keuangan bagi UMKM Halal. Mengintegrasikan FinTech Syariah dalam operasional bisnis juga dapat meningkatkan brand image dan meningkatkan kapasitas bisnis yang berkelanjutan bagi UMKM Halal. Wawasan ini dapat membantu mengembangkan strategi yang efektif untuk inovasi FinTech Islam.

Kata kunci: fintech, halal, open innovation, MSME, UTAUT2

INTRODUCTION

World economic growth has increased significantly, especially within the sharia economic sector (Marlina and Sudana 2022). The State of the Global Islamic Economy Report 2020-2021 indicates that Indonesia is ranked fourth for the halal food sector and third for Muslim fashion products (Muryanto et al. 2022). The halal industry is a global trend with the potential to trigger an economic recovery in the wake of the COVID-19 pandemic (Olivia et al. 2020). Public interest in buying halal products is viewed as one of the leisure areas for improving the economy on both a domestic and global scale (Yuliani and Khuwarazmi 2022). Concerning the impact of the COVID-19 pandemic, if represented by priority sectors in Halal Value Chains, Indonesia's sharia economic performance is generally better than that of the national GDP. While Indonesia's Islamic economy contracted by 1.72% in 2020, this was a lower rate of contraction than for the national GDP (Supriani et al. 2021). In addition, as the world's most populous Muslim-majority country, Indonesia's Muslim population has reached 229 million people (87.2%) out of a total of 273.5 million, while the rise in the halal sector's contribution to GDP to US $ 3.8 billion / year demonstrates a significant opportunity for halal-based MSMEs (Fachrurazi et al. 2022). Nevertheless, halal MSMEs also face complex challenges These include the fact that Indonesia is yet to penetrate the world market for halal products; the relative weakness of the halal sector supply chain; a sub-standard production process; limited capital and technology; and the aftermath of the COVID-19 pandemic (Utomo et al. 2020).

The development of the halal sector is in line with that of the digital economy in Indonesia, especially FinTech, which makes a significant contribution to cashless transactions. FinTech in Indonesia offers transaction time efficiency and opportunities for inclusive and sustainable economic growth (Muthukannan et al. 2021). In addition, the existence of FinTech encourages the emergence of innovative technology-based business models (Wonglimpiyarat 2017). FinTech has helped to boost the performance of Indonesian MSMEs, especially Peer to Peer (P2P) lending and Payment System Sub-Lending, in terms of enhancing integrated microbusiness financial governance (Caisar et al. 2020; Suryono et al. 2021). However, some MSME owners have been reluctant to accept the existence of FinTech and integrate it into their businesses. There are several reasons for this: limited understanding of FinTech, misconceptions of FinTech, sharia law factors, and transaction security risks (Xie et al. 2021). The same barrier exists to integrating FinTech into MSME businesses as to adopting other types of innovation; that is, resistance to change. This renders it difficult for MSME owners to adopt FinTech despite the fact it can encourage better financial access and governance (Singh et al. 2020). In addition, Delloite Access Economics (2021) found that 36% of MSMEs in Indonesia continue to struggle with conventional marketing. Meanwhile, 37% of MSMEs have only basic online marketing capacities such as a computer and broadband access. A further 18% have a medium online capacity as they can use websites and social media. However, only 9% have a digital marketing capacity that can be categorized as sophisticated (Chandra 2022). MSMEs are also constrained by a lack of government support while the competitive environment is not conducive to encouraging owners to feel prepared to use information technology (Setyawan et al. 2015). In particular, halal MSMEs feel pressured by sharia law issues concerning the use of FinTech in business (Usmanova et al. 2022). The above conditions therefore have implications for the reluctance of halal MSME owners to adopt FinTech technology. Nevertheless, many sharia FinTechs are currently operating according to Islamic sharia

principles. They accommodate users in financial transactions while also following sharia law (Mansyur and Ali 2022). Indeed, Pizzi et al. (2021) highlighted the limitations of the literature in identifying the relationship between FinTech and general business sustainability (Pizzi et al. 2021), especially among halal MSMEs. As such, there is research novelty in seeking to identify the impact of Sharia FinTech on the sustainability of halal MSMEs.

The literature review begins with a focus on intentional religiosity, which proposes that religiosity is an important driver of customer satisfaction and behavioral intentions toward a product or service. As such, religiosity impacts attitudes, awareness, interactions, and buying behavior and is therefore a vital factor in influencing a person's consumption of a product or service. Experts argue that trust can represent the information that individuals hold in their minds. Individual beliefs are closely related to scriptures or the culture that influences them. A study on the adoption of mobile banking at the Indonesian Islamic Bank branch of North Sumatra and DI Yogyakarta showed that the results of religiosity significantly affect the intention to use mobile banking (Oktavianita 2021). Similar results have been reported in research on FinTech adoption for Asnaf (Ahmad and Yahaya 2022), Indonesian Islamic philanthropy (Usman et al. 2022), waqf obligations (Zakariyah et al. 2021), and donation interests (Agustiningsih et al. 2021). While in business, research involving MSMEs has shown that religiosity affects the intention to adopt Islamic FinTech (Majid 2021).

Muslims face two challenges when choosing financial services. First, they must understand the term monetary financing and the factors that affect solvency. The second challenge is whether the financing method they seek is sharia-compliant. Therefore, Muslims must develop financial literacy to maintain their faith. Previous empirical evidence exists to indicate that Islamic financial literacy (IFL) influences an individual's decision to adopt Islamic banking services (Akbar et al. 2021) and FinTech (Mansyur and Ali 2022; Rahim et al. 2022).

Technology is used widely in the financial business, thus rendering system security a benchmark in decisions to adopt FinTech in consumer financial management, notably transaction security. The relatively recent emergence of FinTech in Indonesia has given rise to many concerns about security. Moreover, there has been extensive media coverage of negative issues associated with FinTech, including crime, in both banking and FinTech. While many consumers are not up to date with information technology, awareness of technology risks has increased due to an expected rise in the number of cybercrime cases. Research on banking information systems and FinTech has revealed that the security perspective of the digital financial sector system positively influences the perception of transaction system security in the adoption of M-Banking (Nasir et al. 2015; Kaur et al. 2021; Kaur and Arora 2021) and FinTech (Rahim et al. 2022; Ali et al. 2021; Hasan et al. 2021; Saleem 2021). The perceived risk in question concerns the user's fear of the system and the privacy of data provided to consumers. Separately, a belief in risk mitigation is part of the user's positive perspective on the potential risks of the Islamic FinTech application system.

Habit in this context is the tendency of users to automatically use financial services integrated with technology because of previous learning derived from using gadgets as a mediator (Fadzil 2018). This can happen because users have repeatedly used digital financial services and so can use them automatically, thereby reflecting habit in the sense of acting in a structured and repetitive manner. Previous research has successfully demonstrated the encouragement of adoption behavior in digital banking (Yen and Wu 2016; Sharif and Raza 2017; Alalwan et al. 2015) and

FinTech services (Najib et al. 2021; Ahmad and Yahaya 2022). In addition, Septiana et al. (2020) showed that consumer habits strongly encourage the use of a digital banking system for business purposes (Septiana et al. 2020).

Adoption is a process that consumers go through involving knowledge, persuasion, decision, and confirmation before they are ready to adopt a product or service. The decision of whether or not to adopt technology based on either an individual's or another's decision-making involves first reviewing knowledge to form attitudes toward innovation. This then leads to acceptance or rejection decisions, generates thoughts on adoption, and confirms the decisions that have been made (Skare and Soriano 2021). Knowledge is the first stage in the acceptance of system innovation.

Knowledge is employed as a variable in this study since it relates to technology adoption behaviors, especially those that affect a person's life and require a comprehensive understanding. Sound knowledge of a promising FinTech or digital banking system will make it easy for consumers to operate applications for transaction purposes (Majid and Mawaddah 2022; Nasfi et al. 2022).

Price value is a cognitive trade-off that consumers face between the perceived benefits of using an information technology system and the monetary costs incurred to apply it. In technology related to consumers/customers, the greater the benefits received compared to the costs of using the system, the greater a person's intention to adopt the new approach (Chang 2012). This conclusion aligns with research stating that the price value positively and significantly affects the choice to use digital payment applications (Santosa et al. 2021) and M-Banking (Baabdullah et al. 2019).

Social influence is the extent to which consumers understand what other people (e.g., family and friends) consider necessary and believe that the people around them should use certain technologies. Social influence affects a consumer's intention to use technology (Joa and Magsamen-Conrad 2022). When the people closest and most important to them use technology, they will perceive intentions from other people who use technology, especially FinTech applications. This statement is supported by previous research through analyses of UTAUT and the adoption of mobile payment (Upadhyay et al. 2022), FinTech (Xie et al. 2021), and digital banking services (Khan et al. 2022).

The facilitating condition described by Andreas Chang (2012) is a person's confidence level related to the availability of technical and organizational infrastructure that will support the use of an information technology system (Chang 2012). This variable becomes part of the consumer's perspective in self-reflection and includes facility resources that can use a technology system (Ivanova and Kim 2022). Wu et al. (2021) prove that facilitating conditions positively and significantly affect the intention to use mobile banking in Korea (Wu et al. 2021). This aligns with Tusyanah et al. (2021), whose research validates that the facilitating conditions positively affect the choice to use electronic money (Tusyanah et al. 2021). In addition, previous scientific literature has discussed many facilitating conditions in encouraging FinTech adoption (Singh et al. 2020).

Business expectation is the level of convenience associated with the use of technology by consumers. Business expectations will influence consumer intentions to use technology (Venkatesh et al. 2016). When consumers do not perceive that using the technology will require any excess effort on their part, they will intend to use it, mainly for digital financial applications. Mizal and Wijayangka (2020), in the context of their study, identify ease of application as the decision to adopt FinTech as a business transaction tool for Indonesian fashion MSME owners (Mizal and Wijayangka 2020). Meanwhile, from the

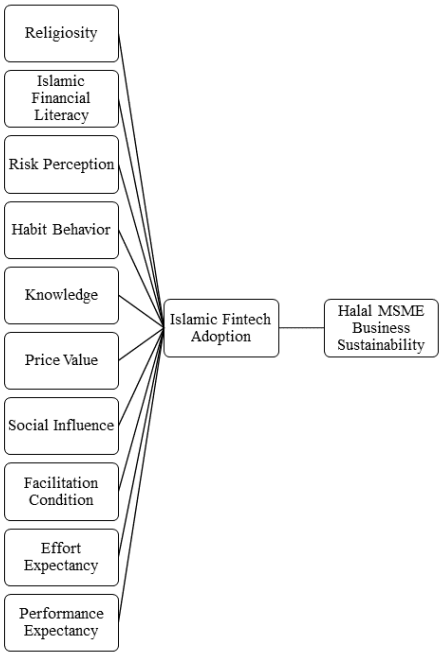

Figure 1
Research Framework

perspective of technology-literate consumers, the choice of technology is determined by the novelty of the system and the advantages of the convenience offered. Interest in adoption will increase if these two conditions are met (Chang 2012). UTAUT has been used to study the Sub-Effort Expectancy theory in research on digital banking services and FinTech payment applications (Yan et al. 2021). However, the search did not identify much effort expectancy among business owners in providing digital transaction services and, at the same time, meeting business needs, especially in lending and governance (Xie et al. 2021).

Performance expectations are defined as the extent to which a technology is believed to help improve performance for users when carrying out certain activities (Venkatesh 2021b). It is held that consumers or users who perceive an increase in performance when utilizing technology will intend to begin using it and then use it continuously (Chan et al. 2022). The results of several studies have proved that performance expectations positively affect the intention to use financial technology (Kurnianingsih 2022; Pratika 2021; Hasif and Ahmad 2019).

It is difficult for halal MSMEs to remain resilient in the context of a highly competitive business environment. A culture of innovation that is not matched by an unlimited capacity for organizational development has weakened many MSMEs. The literature review shows that among small businesses, the main barriers to innovation and encouraging capacity building are limited access to capital and a lack of knowledge of technological developments and their integration into the industry (Ali et al. 2020; Haseeb et al. 2019). FinTech, notably P2P lending and mobile payment, seeks to provide novel solutions that enable MSMEs to maintain their businesses. FinTech can support halal MSMEs in building their capacity for competitiveness and resilience on a global scale by encouraging them as sustainable businesses (Pizzi et al. 2021). Relatedly, Najib et al. (2021) identified the effect of FinTech adoption on the sustainability of food MSMEs during the COVID-19 pandemic (Najib et al. 2021).

The literature review was scrutinized to develop the research problem and form the research model shown in Figure 1. It aims to analyze the adoption of Sharia FinTech in the halal MSME sector based on the UTAUT model and analyze its influence on the sustainability of the Indonesian halal MSME business.

In addition, adjusting FinTech expectations increases financial and business capacity. This study will bridge the research gap in technology adoption by adapting multidisciplinary models across technology, financial management, Islamic economic law, and marketing management to identify practical solutions for halal MSMEs to sustainably increase their business capacity through the adoption of Islamic FinTech.

RESEARCH METHOD

This study will answer research questions and achieve the objectives set out in the introduction to the paper through survey-based explanatory quantitative methods. In a systematic review of the literature on the research methodology concept, Helen Ball (2019) notes that surveys can predict behavior and the significance of variables on relationships (Ball 2019). Consumer behavior measurement research and humanities studies have often used the survey method to find the cause and effect of a phenomenon to produce strategic recommendations.

This study used a questionnaire as its measurement tool along with UTAUT2 as a modified version of UTAUT (Venkatesh et al. 2016) by taking the latent variables habit behavior, price value, social influence, facilitating conditions, effort expectancy, and performance expectancy and adding the variables knowledge, risk perception, islamic fintech adoption, religiosity, and halal MSME business sustainability. The variables and their respective indicators are shown in Table 1. The questionnaire contained a total of 49 indicators and used a five-point Likert scale. The indicators were formulated based on previous research indicators referenced by adjusting the research context. Focus Group Discussion (FGD) were then held with FinTech experts, MSME experts, and Professors of Business Management to validate the feasibility and suitability of the research.

The data were retrieved via Microsoft Forms online questionnaire media and the purposive sampling technique. The following inclusion criteria were established: halal MSME business owners that have been certified by the Indonesian Ministry of Religion, BPJPH (Indonesian Halal Product Assurance Organizing Agency), or the Indonesian Ulema Council halal certification agency, and have interacted with Islamic FinTech applications of all kinds. Concerning the minimum sample size required in PLS-SEM, the rule of thumb is to have 5 to 10 samples per indicator (Leguina 2015). Thus, for 49 indicators, the minimum sample size should be 245 respondents.

The data in this study were analyzed using the Structural Equation Modeling (SEM) technique and SmartPLS 3.0 software. SEM was chosen for its ability to predict and analyze the research model in depth (Hair et al. 2017). The model in PLS comprises two elements, namely the outer model and the inner model. The outer model, known as the measurement model, is evaluated using convergent validity (loading factor and average variance extracted (AVE)) and reliability tests (composite reliability and Cronbach's alpha) (Memon et al. 2021). The evaluation considers the R-squared value used for the dependent construct in the inner model. Using the research hypothesis test on the inner model, the t-statistic value > 1.96 and p-value ≤ 0.05 show a significant influence between the variables (Memon et al. 2021; Ghozali 2013; Streukens and Leroi-Werelds 2016; Hair et al. 2017).

Table 1.
Variables and Indicators

Variable	Indicator	Source	Scale
Religiosity	1. Faith in Allah SWT 2. Faith in prophets and angels 3. Faith in the Kitab (Quran) and Qadha-Qadar 4. Obedience in undertaking religious rituals (prayer, zakat, and fasting) 5. Obedience in charity (help people, generous, believe in truth, honesty, and forgiving) 6. Studying religion 7. Understanding Islamic Sharia Law 8. Understanding the Halal concept	(Zargani et al. 2018; Bananuka et al. 2020; Fauzi and Murniawaty 2020; Maghfiroh 2018; Dali et al. 2019)	Five-point Likert
Islamic Financial Literacy	1. Personal financial contribution to Muslims 2. Understanding the concept of Islamic finance 3. Sharia economic regulations for the welfare of the Ummah 4. Understanding the Law of Riba 5. Basic understanding of Al-Quran and Hadith in sharia economics 6. Understanding of Islamic financial products and institutions 7. Understanding sharia insurance and investment 8. Independent financial ability (retirement planning, Zakat-Infaq-Shadaqah, expenditure efficiency) 9. Trust in the Islamic economic system and Islamic financial institutions	(Ganesan et al. 2020; Alharbie et al. 2021; Wibowo 2020)	Five-point Likert
Risk Perception	1. Trust the security of the Islamic FinTech system 2. Feelings of security when providing information to the Islamic FinTech system 3. Trust that Islamic FinTech safeguards user privacy	(Rahim et al. 2022; Ali et al. 2021; Hasan et al. 2021; Saleem 2021; Nasir et al. 2015)	Five-point Likert

	4.	Understanding and mitigating Islamic FinTech security system risks		
Habit Behavior	1.	The habit of using gadgets to access Islamic FinTech	(Owusu et al. 2019; Tamilmani et al. 2021; Farzin et al. 2021; Ramírez-Correa et al. 2019; Kaur and Arora 2021; Tandon and Kiran 2018; Tamilmani et al. 2017; Venkatesh 2021a)	Five-point Likert
	2.	Transaction habits through FinTech		
	3.	Must use gadgets to access Islamic FinTech services		
Knowledge	1.	Good knowledge of Islamic FinTech products	(Majid and Mawaddah 2022; Nasfi et al. 2022)	Five-point Likert
	2.	Good knowledge of procedures for accessing FinTech		
	3.	Understanding of Islamic FinTech regulations and laws		
Price Value (UTAUT2)	1.	The benefits of using Islamic FinTech outweigh the costs	(Owusu et al. 2019; Tamilmani et al. 2021; Farzin et al. 2021; Ramírez-Correa et al. 2019; S. Kaur and Arora 2021; Tandon and Kiran 2018; Tamilmani et al. 2017; Venkatesh 2021a)	Five-point Likert
	2.	Low cost of obtaining Islamic FinTech service		
	3.	Islamic FinTech is the best value for finance		
	4.	Islamic FinTech fulfills the value of efficiency and difficulty for Muslims	Same as above	
Social Influence (UTAUT2)	1.	Family and friends think users should use Islamic FinTech	Same as above	Five-point Likert
	2.	Many parties recommend the use of Islamic FinTech		
Facilitating Condition (UTAUT2)	1.	Facility resources to access Islamic FinTech	Same as above	Five-point Likert
	2.	Knowledge to access Islamic FinTech		
	3.	Islamic FinTech is compatible with standard FinTech systems		
Effort Expectancy (UTAUT2)	1.	User interaction with Islamic FinTech is clear and easy to understand		Five-point Likert
	2.	Ease of skillful use of Islamic FinTech		
	3.	Ease of learning to use Islamic FinTech		
	4.	FinTech procedures are clear and easy to understand		Five-point Likert
Performance Expectancy (UTAUT2)	1.	Islamic Fintech is helpful to the user's task		

	2.	Speed of completing tasks through the help of Islamic FinTech		Five-point Likert
	3.	Increasing user productivity through the help of Islamic FinTech		
	4.	FinTech connects MSMEs with investors and borrowers		
Islamic Fintech Adoption	1.	Users interact with Islamic FinTech through their financial accounts	(Pizzi et al. 2021; Najib et al. 2021)	Five-point Likert
	2.	Do not hesitate to provide personal information to Islamic FinTech services		
Halal MSME Business Sustainability	1.	Islamic FinTech services improve halal business capabilities	(Pizzi et al 2021; Najib et al. 2021)	Five-point Likert
	2.	Islamic FinTech services increase the productivity of halal MSMEs in a sustainable manner	Focus group discussion	
	3.	Islamic FinTech services increase business competitiveness on a global scale		

RESULT AND ANALYSIS

Characteristics of Respondents

This study had a total of 481 respondents during the data collection period from June to September 2022. Filtering resulted in a final tally of 319 respondents whose data were ready for processing. The majority of the respondents were women business owners. A total of 85 respondents (27%) were 26 to 35 years old. They came primarily from the Sumatra and Java regions, followed by Kalimantan, Bali-Nusa Tenggara, Sulawesi, Maluku, and Papua. The most recent education for the majority of the respondents was senior high school, at 95 people (30%), with higher education amounting to 103 people (32%). Most of the business owner respondents in this study stated that they had run a business for two to five years (37%). However, a majority, 111 respondents (35%), also stated that their income was below 25 million IDR/month, although this was only slightly higher than the number of respondents with an income of between 25 and 50 million IDR/month, namely 105 respondents (33%). Regarding contact with Islamic FinTech, the MSME owner respondents appeared to have used it for up to four years. Most stated that they used Islamic FinTech for business operational transaction facilities. Concerning Islamic FinTech applications, the assertion that most of the respondents use them for transaction facilities is validated given how 58% used LinkAja Syariah as the mainstay of Islamic FinTech, followed by the Syariah Fund and Investree applications, which are already quite well known as Syariah FinTech. Table 2 further illustrates the characteristics of the respondents in this study.

Outer (Measurement) Model

The PLS-SEM analysis method aims to determine the structural relationship between the independent and dependent variables. The outer model analysis is the first step in PLS-SEM analysis to test validity and reliability (Zeng et al. 2021). After running the data using SmartPLS software, the results indicated the suitability

Table 2.
Respondent Characteristics

Characteristic	Criteria	Frequency	Percentage
Gender	Male	146	46%
	Female	173	54%
Age	<25	48	15%
	26–35	85	27%
	36–45	74	23%
	46–55	60	19%
	>55	52	16%
Domicile Region	Sumatera	54	17%
	Jawa	69	22%
	Bali-Nusa Tenggara	42	13%
	Kalimantan	47	15%
	Sulawesi	39	12%
	Maluku Region	35	11%
	Papua	33	10%
Education	Elementary School	54	17%
	Junior High School	67	21%
	Senior High School	95	30%
	Higher Education	103	32%
Length of Business	< 2 years	102	32%
	2–5 years	118	37%
	> 5 years	99	31%
Sales Value	< 25 million IDR/month	111	35%
	25–50 million IDR/month	105	33%
	> 50 million IDR/month	103	32%
Islamic FinTech Experience	1–2 years	115	36%
	3–4 years	138	43%
	> 4 years	66	21%
Business Reason for FinTech Use	Business capacity building	94	23%
	Business operational transaction facility	142	45%
	Improved cost efficiency	83	26%
Islamic FinTech Application	LinkAja Syariah (transaction system and zakat, Infaq Shadaqah)	186	58%
	Dana Syariah (P2P lending)	43	14%
	Investree (P2P lending)	33	10%
	Qazwa (P2P lending)	29	9%
	Duha Syariah (P2P lending Haji Umroh)	17	5%
	Ammana (P2P lending)	11	4%

Table 3.
Outer Model Measurement Result

Variable	Loading Factor Scale	AVE	Composite Reliability	Cronbach's Alpha
Religiosity	0.668–0.835	0.594	0.929	0.914
Islamic Financial Literacy	0.757–0.787	0.778	0.875	0.718
Risk Perception	0.814–0.922	0.777	0.933	0.904
Habit Behavior	0.825–0.888	0.720	0.885	0.810
Knowledge	0.769–0.816	0.623	0.832	0.708
Price Value	0.752–0.798	0.605	0.859	0.784
Social Influence	0.856–0.911	0.781	0.877	0.723
Facilitating Condition	0.904–0.999	0.844	0.942	0.907
Effort Expectancy	0.707–0.878	0.616	0.863	0.793
Performance Expectancy	0.791–0.854	0.679	0.894	0.843
Islamic FinTech Adoption	0.853–0.910	0.530	0.910	0.891
Halal MSME Business Sustainability	0.745–0.818	0.618	0.866	0.800

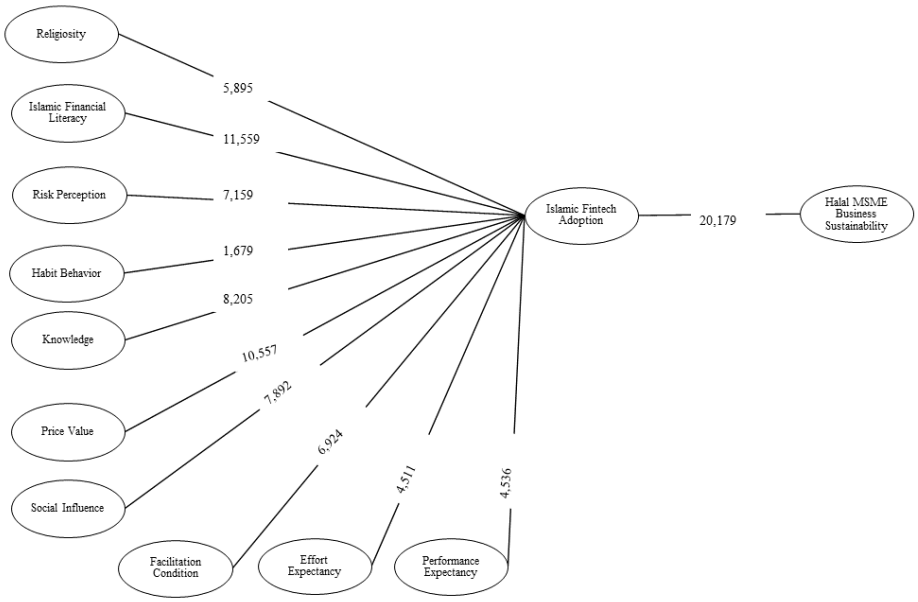

Figure 2
Bootstrapping Output
Source: SmartPLS Analysis

of the research model, meeting the criteria for an outer model in SmartPLS, namely the reflective model as measured by the loading indicators (> 0.5), a Cronbach's alpha value > 0.7, composite reliability of > 0.7, and AVE >0.5 (Sarstedt et al. 2019). Table 3 shows a value of > 0.5 for all of the outer loading values. Therefore, all question items could be maintained. All of the outer model results also showed a Cronbach's alpha value > 0.6, composite reliability of > 0.7, and AVE > 0.5; thus, all of the outer model criteria were met.

Inner (Structural) Model

After testing the measurement (outer) model, the next step is to test the structural (inner) model to determine whether a hypothesis is accepted or rejected. The structural model analysis comprises several stages of testing. The first step is to test the coefficient of determination (R2). A more significant R2 value indicates a better level of determination, with three categories of significance: substantive (0.67), moderate (0.33), and weak (0.19) (Memon et al. 2021). The results of the R-squared test in Table 4 show that 0.860 or 86% (strong) of the variance in the endogenous variable Islamic FinTech Adoption is influenced by the accompanying exogenous variables. Additionally, 97.7% (strong) of the endogenous variable Halal MSME Business Sustainability is influenced by the accompanying exogenous variables. Structural model hypothesis testing in PLS-SEM uses bootstrapping, which produces a t-statistics value. If the t-statistic value obtained is more significant than the t-table with a 95% confidence level (>1.96), the effect is significant (Hair et al. 2017). Structural (inner) model analysis was carried out using the bootstrapping procedure in SmartPLS 3.0. Figure 2 illustrates the PLS-SEM bootstrapping procedure output from SmartPLS 3.0.

The path coefficient test analysis results obtained from the bootstrapping procedure show a significant and positive influence of religiosity, Islamic Fintech literacy, risk perception, knowledge, price value, social influence, facilitating condition, effort expectancy, and performance expectancy on Islamic FinTech adoption. Support for the influence of Islamic FinTech adoption on halal MSME business sustainability was successfully obtained by testing the bootstrapping hypothesis of this research.

Table 4.
Inner (Structural) Model Result (Path Coefficient)

Hypothesis	P-Value	Decision	R-Squared
H1: Religiosity → Islamic FinTech Adoption	0.000 *(5%)	Accept	
H2: Islamic Financial Literacy → Islamic FinTech Adoption	0.000 *(5%)	Accept	
H3: Risk Perception → Islamic FinTech Adoption	0.000 *(5%)	Accept	
H4: Habit Behavior → Islamic FinTech Adoption	0.094 *(5%)	Reject	
H5: Knowledge → Islamic FinTech Adoption	0.000*(5%)	Accept	
H6: Price Value → Islamic FinTech Adoption	0.000*(5%)	Accept	
H7: Social Influence → Islamic FinTech Adoption	0.000*(5%)	Accept	0.860
H8: Facilitating Condition → Islamic FinTech Adoption	0.000*(5%)	Accept	
H9: Effort Expectancy → Islamic FinTech Adoption	0.000*(5%)	Accept	
H10: Performance Expectancy → Islamic FinTech Adoption	0.000*(5%)	Accept	
H11: Islamic FinTech Adoption → Halal MSME Business Sustainability	0.000*(5%)	Accept	0.917

However, the path coefficient analysis results in Table 4 shows that the fourth hypothesis is rejected; thus, habit does not affect Islamic FinTech adoption. Further analysis of the hypotheses will be discussed in the following subchapter.

Discussion

Before analyzing the meaning of the hypotheses, it is necessary to consider why the variables of religiosity, IFL, risk perception, and knowledge were included. This was due to their significance among the halal MSME owners when considering the benefits of innovation and the risks that could potentially harm their business. Halal MSMEs exercise caution in two areas: business sustainability and compliance with sharia law (Silalahi et al. 2022). In addition, a fundamental novelty of this research is the explanation of the effect of adopting Islamic FinTech on the sustainability of halal MSMEs. The statistical summary in this research indicates the significant influence of religiosity, IFL, risk perception, knowledge, price value, social influence, facilitating conditions, effort expectancy, and performance expectancy on Islamic FinTech adoption. The path coefficient test analysis results reject the fourth hypothesis for the influence of habit behavior on Islamic FinTech adoption. Meanwhile, the study has identified the significance of the influence of Islamic FinTech adoption on halal MSME business sustainability, which thus becomes a new strength for MSMEs to develop sustainably through the adoption of Islamic FinTech.

The empirical findings successfully prove the hypothesis for the influence of religiosity on Islamic FinTech adoption. This is interpreted as the role of the religious understanding of halal MSME owners in choosing financial service products that are expected to bring blessings to their business. The use of Islamic FinTech indicates that the business owners comply with Islamic sharia law, notably concerning the prohibition of usury; it thus contributes to the growth of Islamic financial institutions as pillars of the Islamic economy (Muryanto et al. 2022). Religious values indicate adherence to sharia principles and norms in business. While some Indonesian business owners struggle with technological advances due to Islamic conservatism, there is a trend toward sharia-based socio-economic practices. Sharia FinTech supports both progressive and conservative halal MSME owners, but further education is needed to encourage wider participation. Islamic FinTech companies should thus prioritize Islamic values in promotions to attract more halal MSME owners. It is recommended to strengthen service products, education, and promotions to maintain user loyalty.

The hypothesis for the influence of the IFL variable on Islamic FinTech adoption was also supported (H2). This

indicates a high degree of IFL and thus a greater level of interest among halal MSME owners in adopting Islamic FinTech services. IFL could not be separated from the life of a halal MSME owner as a Muslim since it concerned the central financial management ability used to make economic decisions during a pandemic. Low IFL leads to wrong economic decisions, violates religion, and has the potential to lead to business failure (Sekaryuni et al. 2021). By acquiring knowledge of Islamic finance, business owners will know that its principles are unique in that they thoroughly promote justice and benevolence among the parties specifically and members of society in general. Islamic FinTech companies must therefore attempt to increase public understanding of Islamic finance and Islamic FinTech products that suit their needs and influence their solvency. Sharia practices must be equally aligned in FinTech; there are many cases where financial institutions act in the name of a banking or Islamic financial institution but where in reality, they do not differ greatly from conventional banks. The fraudulent attempts of several bogus financial institutions to target Islamic consumers, especially those looking for loans, have rendered halal MSME owners extra cautious, notably those who need financing. Promotional and educational activities for Islamic FinTech services are needed to communicate with halal MSME owners directly and via social and mass media. This result aligns with those obtained by several previous studies (Akbar et al. 2021; Mansyur and Ali 2022b; Rahim et al. 2022).

This study notes the effect of risk perception on Islamic FinTech adoption, which is in line with previous research (Rahim et al. 2022; Ali et al. 2021; Hasan et al. 2021; Saleem 2021; Nasir et al. 2015; Kaur and Arora 2021). Transactions conducted through technology are considered riskier than conventional transactions. Users do not want transaction system vulnerabilities that threaten security. This particularly concerns the privacy of data entered when registering for FinTech services or applying for P2P lending financing. Moreover, every FinTech company has a multifunctional advantage by using different technologies such as Radio Frequency Identification (RFID), Near Field Communication (NFC), Internet of Things (IoT), and Blockchain, among others (Faridi and Malik 2020). The security guarantee of the Islamic FinTech system gives halal MSME owners the confidence to perform transactions. In addition, the level of security maintained by Islamic FinTech creates a positive emphasis for marketing campaigns to increase the sense of trust and comfort for halal MSME owners and business stakeholders in conducting business. It also demonstrates that while the habit of using gadgets is digitizing financial transactions, security and risk considerations must be prioritized due to companies' unequal system infrastructure, which is challenging to detect with the naked eye. As such, the fourth hypothesis is rejected, and the statement that habit affects Islamic FinTech adoption is zero. While this result is in stark contrast to previous research (Yen and Wu 2016; Sharif and Raza 2017; Alalwan et al. 2015; Najib et al. 2021; Ahmad and Yahaya 2022; Septiana et al. 2020), it is understandable that Muslims, especially business owners, are taught to be careful if there is a risk of endangering the sustainability of their welfare, including the financial health of the business. Habit is not supported due to other more important factors such as technology availability and support, confidence in data security and privacy, knowledge and understanding of FinTech technology, and ease of use and user experience.

The proposed hypothesis that knowledge affects Islamic FinTech adoption is accepted; it can thus be concluded that a good understanding of financial technology among halal MSME owners significantly impacts adoption intentions. An established knowledge of

Islamic FinTech operations will thus encourage halal MSME owners to attempt to integrate Islamic FinTech into their business. This result is in line with previous research (Majid and Mawaddah 2022; Nasfi et al. 2022). It is also related to the risk perception variable, where users must have knowledge of service security and reliability aspects. The marketing team plays a vital role in the information channel for users, especially in the promotion of FinTech services and their advantages.

This study makes an essential point by validating the evidence of a positive relationship between price value and Islamic FinTech adoption, as asserted in previous research studies (Santosa et al. 2021; Baabdullah et al. 2019). This result is entirely rational in the context of MSME owners choosing a FinTech service that can encourage cost efficiency in their business. It should be noted that a positive price value is achieved when the benefits of using FinTech are greater than the monetary cost of using the technology (Patil et al. 2019). In addition, Islamic FinTech can increase business value and help to develop it much further via a halal business background that integrates innovative FinTech into its operations. However, business owners must still maintain budget efficiency in innovating, primarily through FinTech with good data management and technology-based organizational work patterns.

The social influence factor positively and significantly impacts Islamic FinTech adoption. Here, the results of this study align with those of previous studies (Joa and Magsamen-Conrad 2022; Upadhyay et al. 2022; Xie et al. 2021; Khan et al. 2022). This variable is closely related to Indonesian society, which places great importance on social values. The effect of informational signals from the users of FinTech, both conventional and sharia, makes halal MSME owners perceive that the use of FinTech that has already been widely adopted by others signifies the achievement of benefits for others, especially transaction efficiency. Additionally, in the view of other Muslim communities, it does not violate religious norms to encourage halal MSME owners to integrate sharia FinTech into their business operations. This variable relates to the knowledge variable because MSME owners also obtain information about Islamic FinTech from the people around them as users. Social influences, especially so-called "netizen review power," become prominent in consumer decision behavior (Rochmana et al. 2022). The function of opinion leaders and patrons is essential in encouraging consumer decision-making, especially among halal MSME owners (Suryono et al. 2021). Therefore, the strengthening of the role of other users who are perceived as influential opinion leaders in the community, such as social media influencers, in addition to positive news about Islamic FinTech, needs to be disseminated.

The eighth hypothesis is supported and is in line with previous studies (Tusyanah et al. 2021; Singh et al. 2020; Wu et al. 2021). Technical support and ownership of basic infrastructure to access Islamic FinTech services help to enhance halal MSME owners' future adoption. Both of these reveal that if users are provided with better facilitating conditions such as technical support and basic infrastructure, it will lead to better acceptance of internet banking among Islamic bank clients. Sharia FinTech companies should seek to strengthen the facilitating conditions for halal MSME owners by increasing contact center facilities to convince them, as potential consumers, that Islamic FinTech can help them achieve their business vision.

The testing of the path coefficient in the bootstrapping procedure on the ninth hypothesis shows that the basis for adopting Islamic FinTech in halal MSME business operations in a sustainable manner will be established provided it is easy to operate and does not require complicated instructions to develop the intention to use it sustainably. The acceptance of the tenth hypothesis also demonstrates the

importance of application benefits in improving customer performance. Islamic FinTech companies are thus obliged to ensure that their applications can encourage monetary gains for halal MSME owners and that they are easy and inclusive for owners to understand. The results of these two hypotheses are in line with previous research (Yan et al. 2021; Xie et al. 2021; Kurnianingsih 2022; Pratika 2021; Hasif and Ahmad 2019).

In connection with the emergence of the business sustainability hypothesis, this study gained insight into the influence of Islamic FinTech adoption on halal MSME business sustainability. The adoption of Islamic FinTech is a strategy by which halal MSMEs can achieve a continuous competitive advantage that enables them to dominate both old and new markets. The most important element in achieving success is that the strategy applied can create unique and novelty products, processes, or service systems that can realize continuous competitive advantage.

In general, this study has succeeded in shaping the academic contribution of improving the UTAUT2 model in predicting the adoption of Islamic FinTech among halal MSME owners in Indonesia. The study obtained the involvement of cross-disciplinary branches (Financial Management, Information Systems, and Islamic Economics) to provide new insights into technology adoption in the pillars of the Islamic economy and ensure that those insights can be followed up by interested parties in the Islamic finance industry in addition to halal MSMEs when considering open innovation in their business operations. The use of FinTech in the halal small business industry proves that MSMEs are open to innovation. FinTech is an open innovation solution that can enable halal MSMEs to remain productive and competitive. To date, halal MSMEs have faced a barrier to growth based on a lack of openness to innovation. Collaboration with external parties is thus required to develop innovations for these businesses, such as through FinTech. The goal of sustainable halal MSMEs will be achieved. This will further encourage increased business capacity and halal profit growth for the welfare of MSME owners and workers who will in turn increase the contribution of the halal industry to the welfare of the Indonesian people.

CONCLUSION

This study designed a UTAUT2 adoption model by modifying the research context to include Islamic values and has successfully recorded the significant influence of religiosity, IFL, risk perception, knowledge, price value, social influence, facilitating conditions, effort expectancy, and performance expectancy on Islamic FinTech adoption. The path coefficient test analysis results rejected the fourth hypothesis on the influence of habit behavior on Islamic FinTech adoption. This study has also determined the significant influence of Islamic FinTech adoption on halal MSME business sustainability so that it becomes a new strength for MSMEs to develop sustainably. The existence of Islamic FinTech as an open innovation has ensured its adoption by low-tech-sector business units such as the halal MSMEs in this study. These businesses benefit from such adoption while also encouraging the positive financial sustainability of halal MSMEs as pillars of the Islamic economy. The integration of open innovation by halal MSMEs into their business operations leads to the indirect conclusion that Islamic business units can adapt to Industry 4.0 by packaging sharia law.

Islamic FinTech companies should prioritize Islamic values in promotions to increase the participation of halal MSME owners. Strengthening service products, especially education and promotions, is essential to maintain user loyalty. Improvements to sharia financial literacy and the legitimacy of banking services are required to achieve public acceptance of

sharia financial services. To improve security features and infrastructure, FinTech companies should provide users with instructions and training. Government supervision is needed to ensure consumer protection, and social media and opinion leaders can be leveraged to influence the adoption of Islamic FinTech. Business owners can promote FinTech services to consumers and increase brand awareness. Future research should expand the data coverage and add new variables to enrich strategies for sustainable halal MSMEs.

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