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ISLAMIC FINTECH FINANCING ADOPTION AMONGST ASNAF MICRO ENTREPRENEURS IN MALAYSIA: EXTENDED UTAUT2

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ABSTRACT

Zakat serves as a significant mechanism for improving Asnaf's income. Participants in the Islamic financial industry have acknowledged its potential and adopted various fintech strategies, per Bank Negara Malaysia's support for a more proactive collaborative approach to enhance Malaysia's Islamic social finance (ISF) landscape. Statistics and reports about technology adoption among Asnaf are scarce. This study examines how the extended Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) and Technology-Organisation-Environment (TOE) factors affect Asnaf micro entrepreneurs in Malaysia's use of Islamic fintech financing. Following a thorough data screening process, a total of 292 samples is accepted for analysis using a partial least squares structural equation model (PLS-SEM). Performance expectancy, price value, shariah financial literacy, perceived trust, and consumer pressure all significantly and positively influence the intention to use Islamic fintech financing. Subsequently, adoption is significantly influenced by behavioural intentions and facilitating conditions. This research represents one of the initial investigations into end users' factors influencing the adoption of Islamic fintech among Asnaf micro entrepreneurs, a field that is still nascent.

Keywords: Asnaf micro entrepreneurs, Islamic fintech, Islamic microfinancing, UTAUT2, TOE.
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I. INTRODUCTION

Asnaf micro entrepreneurs own small businesses and rely on them for income. Since they often struggle to access traditional financing, efforts are being made to provide them with zakat through capital assistance. Recently, there has been renewed interest in Islamic Social Finance (ISF) to promote social development in Malaysia based on BNM's Financial Sector Blueprint 2022-2026 (Bank Negara Malaysia, 2022). Among the initiatives taken is iTEKAD, a blended social finance initiative first introduced in 2020 by Bank Islam. It has also incorporated a fintech element through its charity crowdfunding arm, Sadaqah House. Given this impressive development, fintech financing might best serve Asnafs' funding needs (Jauhari et al., 2023).

Furthermore, Malaysia provides a good ecosystem for fintech to flourish based on the government's full support and the proactiveness of regulators and supporting agencies. According to Mufti Faraz Adam, Islamic fintech can be defined as innovative and disruptive Shariah compliant services and products being offered through technology that is not limited to a banking firm, digital banks, wealth management, traditional wealth management, Takaful space, Sukuk, regulation and crowdfunding. It is a move and shift of traditional Islamic finance towards digital space accompanied by lower cost, larger scale or outreach, streamlined, seamless and greater transparency (TAIF Digital Institute for Islamic Finance, 2020). The fintech financing space manifests via online financing, peer-to-peer financing (P2P), equity crowdfunding, donation crowdfunding, and psychometric assessment.

For technologies to improve productivity and be better utilised, they must be accepted and used by end users. Explaining user acceptance of new technology is often described as one of the most mature research areas in the contemporary information systems (IS) literature (Venkatesh et al., 2003). Microenterprises encounter challenges in digitalisation stemming from issues of affordability and limited digital literacy. However, they show strong use of computing devices and internet services, with 90% owning smartphones, indicating the potential for further digitalisation (Salim, 2020; SME Corporation Malaysia & Hua Wei, 2018; The World Bank Group, 2021).

Using fintech in Zakat institutions is a smart move that could help with some of the problems that have been pointed out, such as inefficient distribution, slow bureaucratic processes that make it hard to distribute Zakat on time, and a lack of credit risk assessment for Asnaf microfinancing that calls for a more thorough qualitative risk assessment (Ab Rahman et al., 2012; Basaha et al., 2021). Numerous Zakat institutions prioritise Zakat collection, particularly from the payers, while overlooking the distribution process, which entails acceptance by Asnaf. Today, three Zakat institutions have integrated fintech into their Zakat microfinancing distribution practices. However, there is limited literature on Asnaf technology acceptance. On the other hand, recommendations from currently available studies suggest integrating theories beyond the Technology Acceptance Model to address overlooked aspects, as suggested by Shaikh & Amin (2025) and Yahaya & Ahmad (2019). Overall, these developments shed light on the paper's establishment to examine the acceptance of fintech among Asnaf micro entrepreneurs who utilise these microfinancing schemes provided by Zakat.

Thus, this research examines the factors influencing the adoption of Islamic fintech by Zakat institutions, utilising an extended version of the unified theory of acceptance and use of technology 2 (UTAUT2) alongside the Technology-Organisation-Environment (TOE). This study represents one of the earliest investigations into the adoption of Islamic fintech financing by Asnaf micro entrepreneurs, reflecting the novelty of this phenomenon within Malaysia's Islamic social finance landscape. Most UTAUT studies related to Islamic fintech and Asnaf or micro enterprises focus solely on behavioural intention, as actual adoption has not yet occurred.

The paper is organised as follows: Section 2 summarises relevant literature, while Section 3 explains the conceptual framework and hypothesis development. Section 4 discusses methodology. Section 5 deliberates on model results and Section 6 concludes and provides recommendations.

II. LITERATURE REVIEW

2.1. Background Theory

The Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB), Theory of Reasoned Action (TRA), and Diffusion of Innovation (DOI), a model combining the TAM and TPB, are theories to predict user adoption of a given technology. However, these theories have some limitations. They are primarily individual-focused rather than organisation-focused, are primarily tested in an academic setting, and focus on voluntary usage as opposed to mandatory settings, which may attract more interest from organisations planning to introduce the technology. Furthermore, these models account for less than 53% of the variation in user intentions to use information technology (Ventakesh et al., 2003). Venkatesh et al. (2003) developed a Unified Theory of Acceptance and Use of Technology (UTAUT) based on the earlier eight models. Based on the same data used in the first eight models, UTAUT has a better ability to explain why people want to use technology. Its main concepts are performance expectation, effort expectation, social influence, facilitating conditions, behavioural intention, and usage behaviour. A key distinction between UTAUT and its predecessors is that it proposes four moderators: age, gender, experience, and voluntariness. Still, there is concern about the sufficiency of the constructs to be applicable in all contexts, especially in a non-mandatory setup involving individual adoption (Ventakesh et al., 2003).

Nine years later, Venkatesh et al. (2012) extend the theory to incorporate three additional constructs from the perspectives of consumers, namely, hedonic motivation, price value, and habit. The extensions provided in UTAUT2 significantly improve the variation explained in behavioural intention compared to UTAUT, from 56% to 74%. Despite being classified as a business entity, Asnaf lacks a complete organisational setup, including employees and the establishment of support units. Thus, they fit both consumer and business perspectives. UTAUT2 does not capture other factors that might influence business decision-making regarding digitalisation, particularly for the business owner. On the other hand, TOE is appropriate and suitable for business. It incorporates major internal and external factors that influence technological innovation: top management

support, information intensity, employee knowledge, absorptive capability, the environment's competitive pressure, trading partner pressure, external support, and government support (Baker, 2012).

2.2. Previous Studies

2.2.1. Technology and Fintech adoption in Malaysia's Zakat institutions

Islamic fintech is widely used in Islamic banking and financial institutions. While Zakat institutions mainly focus on Zakat collection, there is potential for improvement in distribution, awareness, and Zakat fund reporting. Zakat institutions allow direct interbank transfers and use the Financial Process Exchange (FPX) service for Zakat payments. Some have their mobile applications, and all use e-commerce platforms, e-wallet players, e-government platforms, national bill payment channels, and Islamic debit/credit cards for outreach (Che Mohd Salleh & Chowdhury, 2020; Meerangani et al., 2022). Only 60% of Zakat institutions have online distribution methods; only Majlis Agama Islam dan Adat Melayu Terengganu (MAIDAM) and Majlis Agama Islam Kelantan (MAIK) offer online business capital assistance applications. Lembaga Zakat Selangor (LZS) uses consultants' aptitude assessments to measure entrepreneurship capability for capital aid pre-approval (Shiyuti & Al-Habshi, 2018).

Meerangani et al. (2022) find the potential for digitalisation in Zakat institutions largely untapped. In Malaysia, Islamic Social Finance has adopted fintech, which has improved transaction processes and asset management. Challenges include cost and public acceptance, while prospects include e-vouchers and apps promoting transparency and integrity (Kamaruddin et al., 2023). Ahmad & Yahaya (2023) survey Asnaf Fintech adoption in Malaysia, which indicates high mobile phone ownership. According to the research, only two Zakat institutions offer alternative financing methods, and only one employs psychometric scoring to verify the eligibility of candidates for business capital and to establish appropriate training programs. Even renowned MFIs like AIM and TEKUN have not yet embarked on these fintech applications, perhaps due to expected poor reception, but fintech is very important to enhance greater transparency, provide efficiency, ease access to financing, and reduce moral hazard. Empirical studies on Islamic fintech adoption would comfort these financial providers and suggest additional improvement plans or strategies for existing services.

2.2.2. Islamic Fintech adoption: Consumer Behaviour

The majority of authors, as indicated by the articles and systematic literature review, use TAM, UTAUT, or UTAUT2 to examine the factors that influence the intention to use Fintech and Islamic Fintech. UTAUT, UTAUT2, and TOE have emerged as the predominant frameworks for SMEs seeking to adopt general technology. Because of its more comprehensive constructs, UTAUT2 is a superior alternative to TAM. They incorporate additional significant factors alongside comparable elements from TAM, such as performance expectancy and effort expectancy. The majority of the studies are quantitative in nature, with 29 of the

37 articles employing the partial least squares structural equation modelling (PLS-SEM) technique. Additionally, nearly 80% employ a five-point Likert scale.

A common issue in the literature is the ambiguity of the research questionnaire scaling method. Research on behavioral intention relies exclusively on rating scale outcomes. The rating scale's accuracy and subjective qualitative assessment measurement are critical factors. Researchers must explicitly state their qualitative method, which is contingent upon the chosen scaling methods, including the specific method, the number of scales, and the appropriateness of the questions posed. Revilla et al. (2014) argue that researchers should limit response scale options to five instead of seven or eleven, as this strategy does not provide extra information and may result in diminished data quality. The second issue pertains to the limited sample size, as structural equation modelling (SEM) requires over 100 samples to enhance analytical power (Kline, 2005). Furthermore, some authors fail to specify the fintech products and services under investigation, and they fail to provide a rationale for the exclusion of variables from UTAUT/UTAUT2.

2.2.3. Extension and Integration of UTAUT/UTAUT2

Table 1.
Distribution of the Extended UTAUT2 Theory

Categories	No of articles	Classification
UTAUT2 Application	24	The researchers employed exclusively the elements of the UTAUT2 framework and its moderators within their research model, either partially or entirely.
UTAUT2 Integration	57	The researchers combined the complete UTAUT2 framework or specific components of it with at least one other theoretically significant theory in their research model. Comprises 43 empirical studies and 14 conceptual studies
UTAUT2 Extension	66	They introduced external variables using seven mechanisms, including exogenous and endogenous factors, moderation, mediation, outcomes, and internal and external mechanisms. Comprises 65 empirical studies and 1 conceptual studies

Source : Tamilmani, Rana, Wamba, et al (2021)

Based on systematic literature review studies that cite UTAUT2-originating articles, extensions of UTAUT2 has been most popular as researchers incorporated context-specific variables into the model, followed by integration as per Table 1. For instance, Rosli et al. (2012) propose a conceptual model that integrates the TOE framework with UTAUT2 to evaluate factors influencing the acceptance of computer-assisted auditing tools (CAATs) in public audit firms to capture individual and organisational standpoints.

2.2.3.1. Extension of UTAUT2: External Exogenous Variables

Table 2.
Most Popular UTAUT2 Extensions Across 33 Studies

Exogenous variables	Endogenous Variables	Significant	Not significant
Trust	Behavioural intention	12	1
Perceived risk	Behavioural intention	7	2
Self-efficacy	Behavioural intention	4	1
Attitude	Behavioural intention	3	-
Personal innovativeness	Behavioural intention	3	-

Source : (Tamilmani, Rana, & Dwivedi, 2021)

Five primary extensions of the UTAUT2 model are trust, personal innovativeness, perceived risk, attitude, and self-efficacy based on meta-analytic evaluation (Tamilmani, Rana, & Dwivedi, 2021). Trust is ranked highest and may also indirectly affect risk perceptions, as there is an inverse relationship where increased trust leads to reduced perceived risk. Consequently, selecting a single variable is justified, with researchers favouring trust over risk.

2.2.3.2. UTAUT2 Extension in Fintech/Islamic Fintech Adoption Studies

Bakri, Aziz, et al. (2023) assert that trust plays a significant role in the adoption behavior of DDKOIN, a provider of blockchain solutions, thereby highlighting the importance of trust as a key factor in improving the original UTAUT2 model. When local authorities oversee platforms, users tend to view them as more secure and trustworthy. Nashwan et al. (2023) propose an integrated model that analyzes factors from the UTAUT framework in ZakaTech, incorporating insights from social cognitive theory (SCT). Research indicates that during the COVID-19 pandemic and the implementation of social distancing measures, trust in the e-zakat system significantly affects individuals' willingness to utilise ZakaTech services. There are instances where individuals employ an alternative term, such as perceived credibility, to represent trust, thereby positively influencing the acceptance of Islamic mobile fintech services. Contextual factors play a significant role.

The UTAUT framework influences the behavioural intention of Malaysian millennials towards adopting Islamic e-wallets, as explored in a study. The framework incorporates Shariah-compliant variables, reflecting a specific focus on Islamic e-wallets, and demonstrates a significant impact on acceptance (Bakria, Almansoori, et al., 2023). In addition to UTAUT factors, religiosity plays a significant role in the acceptance of the Islamic payment gateway system and the blockchain, as well as in the adoption, perception, and use behaviour of Facebook (Bouaguel et al., 2021; Liew et al., 2014; Rasid et al., 2023).

The cultural aspect of religiosity, specific to Islamic fintech in individual contexts, is essential for addressing the limitations of UTAUT (Rajapakse, 2011). It is posited that, from an organisational perspective, micro business entities should incorporate additional universal factors from the TOE framework, particularly environmental context, to achieve more comprehensive results. Contextual factors hold equal significance.

III. CONCEPTUAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

3.1. Conceptual Framework

The modified UTAUT2 model serves as the foundation for this study's conceptual framework development, which integrates the TOE framework, as shown in Figure 1. Micro entrepreneurs, such as Asnaf, may exhibit hybrid characteristics and lack a comprehensive organisational structure. However, they maintain their status as a distinct business entity. The study removes hedonic motivation from the UTAUT2 framework due to its unsuitability for the research setting. Islamic fintech focusses on staying within Shariah parameters and achieving Al-Falah rather than deriving enjoyment from technology. Because respondents utilise technology for non-voluntary business facilitation, the study excludes hedonic incentive and habit. Trust and Shariah financial literacy are also important for adoption.

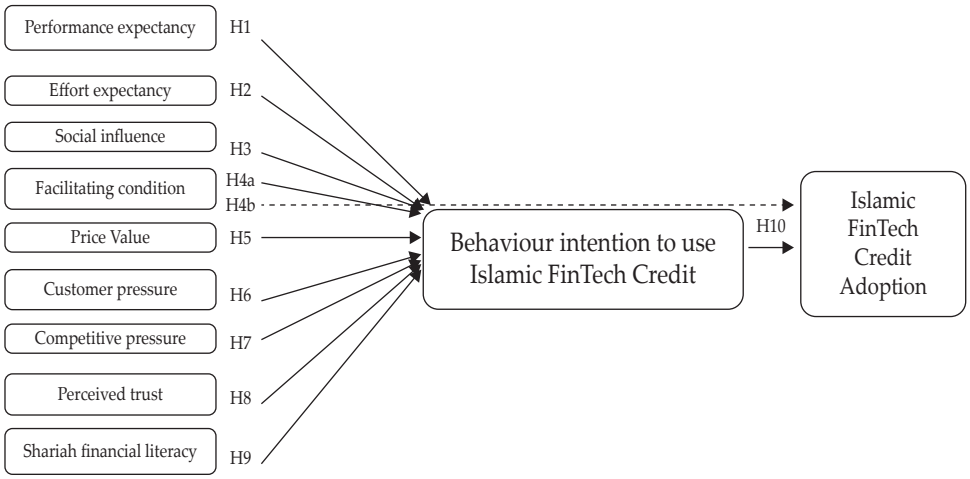

Figure 1.
Conceptual Framework of the Study

3.2. Hypotheses Development

Performance expectancy (PE) is the extent to which a person believes that using the system will improve job performance. It is the most tested factor in UTAUT, i.e. in almost 80% of research on ICT adoption among MSMEs in non-OECD countries. (Y. Lee et al., 2024). Fintech enhances decision-making, transparency, and productivity, prioritizing technology's performance.

H1: Performance Expectancy (PE) has a positive and significant relationship with Behaviour intention to adopt Islamic fintech financing

Effort expectancy measures system usability. EE serves as the third component in MSMEs' ICT adoption research in non-OECD countries, whereby four out of ten researchers include it for their research (Y. Lee et al., 2024). Previous investigations yielded varied outcomes. EE significantly increases millennials' motivation to use

the Crowdfunding-Waqf Model and Islamic fintech (Bakria, Almansoori, et al., 2023; Maharani & Widiastuti, 2023; Mansyur & Ali, 2022). Rahim et al. (2023) find that the relation between Malaysian millennials' effort expectancy and Islamic Fintech adoption is negligible.

H2: Effort Expectancy (EE) has a positive and significant relationship with Behaviour intention to adopt Islamic fintech financing

Social Influence (SI) is how much a person thinks others should utilise new technology. A systematic review by Lee et al. (2024) finds 20% of UTAUT writers use SI. One additional item category is added in this study, which is the influence of entities like financial institutions, Zakat institutions, and government agencies that might influence Asnaf's behaviour to use Islamic fintech financing, in line with Sulaeman & Ninglasari (2020).

H3: Social influence (SI) has a positive and significant relationship with Behaviour intention to adopt Islamic fintech financing

Facilitating Conditions (FC) are the extent to which an individual believes the system has an organisational and technological infrastructure to enable its utilisation. FC is the second most tested factor in UTAUT, with 52% used in MSMEs in non-OECD countries' ICT adoption research (Y. Lee et al., 2024). Someone will be more likely to employ easily accessible technology with help facilities. Azman & Zabri (2022) show that FC directly determines user adoption. When they are on board, Asnaf micro entrepreneurs need immediate guidance, necessary skills, supported devices, and technical support.

H4a: Facilitating Conditions (FC) has a positive and significant relationship with Behaviour intention to adopt Islamic fintech financing
H4b: Facilitating Conditions (FC) has a positive and significant relationship with Islamic fintech financing Adoption

UTAUT2 adds price value (PV). Cost and price may have affected consumers' technology use (Venkatesh et al., 2012). This applies to underprivileged asnaf who desire to utilise the technology when they believe the benefits will surpass the expense, and price value positively affects intention. The lower logistical cost and faster online finance application approval are examined in this study.

H5: Price Value (PV) has a positive and significant relationship with Behaviour intention to adopt Islamic fintech financing

TOE's environmental dimension includes customer pressure (CUSP). Understanding and meeting the needs of target market customers drives customer pressure, reflecting their perspective. Susanty et al. (2019) address how client pressure affects SMEs' early technology adoption. 23 studies employ customer pressure as a predictor, making it the second most used concept in 204 TOE literatures under the environmental categories (Zamani, 2022).

H6: Customer Pressure (CUSP) has a positive and significant relationship with Behaviour intention to adopt Islamic fintech financing

Due to market competitiveness, organisations absorb innovation faster (Huo et al., 2014). Businesses must continually evaluate and employ new technology to compete. Competitive pressure is a major element in SMEs adopting new technology (Abed, 2020; AlSharji et al., 2018; Chau et al., 2020; Prause, 2019). Competitive pressure is the top predictor, with 54 studies in 204 TOE-related environmental research (Zamani, 2022).

H7: Competitive Pressure (CP) has a positive and significant relationship with Behaviour intention to adopt Islamic fintech financing

Many factors can explain Perceived Trust (TR), but this study defines it as a person's desire to believe service providers' statements or actions (Mayer et al., 1995). Lee & Ullah (2011) argue that Islamic bank customers must comply with Shariah. If a bank repeatedly infringes Shariah laws, clients may close their accounts. With Islamic fintech, trust in Shariah compliance grows. Thus, it is hypothesized that Asnaf will have higher trust towards Zakat institutions for its Shariah compliant management and credible fintech service provider appointed by them.

H8: Perceived Trust (TR) has a positive and significant relationship with Behaviour intention to adopt Islamic fintech financing

The connection between financial literacy and awareness is relevant in most fintech products (Morgan & Long, 2020). One study finds that Shariah financial literacy (SFL) substantially impacts behavioural intentions to use Shariah Fintech. Understanding the fundamental knowledge of Shariah finance, the commonly used Islamic finance model, and its diverse range of products aligns well with the intention to use Shariah fintech applications in daily life (Setiawan et al., 2021). However, this study concentrates primarily on awareness, as Asnaf may require a deeper understanding of Islamic finance than just awareness. SFL is gaining traction, but only seven studies have incorporated it, all of which demonstrate a significant relationship with behaviour intention.

H9: Shariah Financial Literacy (SFL) has a positive and significant relationship with Behaviour intention to adopt Islamic fintech financing

According to Yu (2012), individual behaviour is believed to be foreseeable and shaped by their intentions, a view consistent with established psychological theories. UTAUT2 also affirms that behavioural intention significantly influences technology adoption rates (Venkatesh et al., 2003). Moreover, several studies emphasize the crucial role of behavioural intention in technology usage, particularly in Islamic fintech research, where most studies focus solely on intention rather than actual behaviour (Ramdhani et al., 2022; Imsar et al., 2023; Rahim et al., 2023;

Rahman et al., 2020). Therefore, this study addresses this gap and proposes the following hypothesis:

H10: Behaviour Intention to adopt Islamic fintech financing (BI) has a positive and significant relationship with Adoption of Islamic fintech financing

IV. METHODOLOGY

4.1. Data and Sample

Our study population is Asnaf micro entrepreneurs who use online financing applications and answer the psychometric assessment. We focus only on three Zakat institutions that are implementing such fintech services: MAIK, MAIDAM, and TERAS (LZS).

According to Cochran (1977), 328 is the sample size derived using the formula below (Cochran, 1977).

$$n = \frac{n_0}{1+\frac{(n_0-1)}{N}}$$

n_0: Cochran's sample size computed using the formula for ideal sample size, 385

N: the size of the population, 2204

The decision to establish a sample size of approximately 200 to 300 is a response to the difficulties in engaging with Asnaf entrepreneurs, who exhibit caution towards potential scam communications and maintain busy schedules influenced by adverse business sentiments. Using G*Power software, ten predictors yield a sample size of 132, employing a conservative approach with a low effect size of 0.2, reflecting the variability among participants. Hair et al.'s (2017) power tables with a statistical power of 80% propose a sample size of 189 with ten maximum arrows pointing towards an indicator, 95% confidence level and 15% minimum R square. Nonetheless, Kline (2005) provides sample size guidelines for structural equation model analysis, ranging from 100 to 200, with over 200 considered large.

4.2. Model Development

Quantitative approaches will be used to poll attitudes with 54 closed-ended questions based on specified instruments. Each question will be graded on a five-point Likert scale for statistical consistency. Based on technology theory literature, a five-point Likert scale produces the least bias and the most result variability (Eutsler & Lang, 2015). The five-point Likert scale is used to reduce survey confusion and frustration because of the respondents' lesser fintech literacy and education.

Table 3 provides details of the instruments and their sources. The questionnaire is developed based on 11 factors in the hypothetical model, with 54 items designed to measure these factors. The questionnaire consists of two parts: the first part gathers personal and demographic information while the second part focuses on

the model items. All items are adapted from existing literature and adjusted to fit the context of this research.

Table 3.
Survey Instruments and Sources

No	Constructs	Items	Sources
1	Performance expectancy	I would find fintech financing useful in my life (PE1) Fintech financing increases my chance to be successful in business. (PE2) Fintech financing helps me accomplish things more quickly. (PE3) Fintech financing increases my income (Sales minus cost). (PE4)	Venkatesh et al. (2003) Rahman et al. (2020)
2	Effort expectancy	Fintech financing is clear and understandable (EE1) Fintech financing is easy to use. (EE2) It is easy for me to become skilful at using fintech financing. (EE3)	Venkatesh et al. (2003) Rahman et al. (2020)
3	Social influence	My family thinks that I should use fintech financing. (SI1) My friends think that I should use fintech financing. (SI2) Community around me think that I should use fintech financing. (SI3) My colleagues/boss think that I should use fintech financing. (SI4) Financial institution, Zakat institutions/government/ government agencies influence me to use fintech financing. (SI5)	Venkatesh et al. (2003) Rahman et al. (2020) More direct question to targeted respondents
4	Facilitating conditions	I have necessary guidance and information to use fintech financing. (FC1) I have the necessary skills to use use fintech financing. (FC2) I can easily access other required technologies such as internet connection, smartphone and others. (FC3) I can get help from others (families, friends, neighbours and others) when I have difficulties using fintech financing. (FC4)	Venkatesh et al. (2003) Rahman et al. (2020) Sulaeman & Ninglasari (2020)
5	Price Value	The logistic cost is affordable to use fintech financing. (PV1) I do not have to close shop when I apply for financing via online compared to banks/financial institutions. (PV2) I do not have to close shop when I answer psychometric test provided by Zakat institutions. (PV3) Islamic fintech financing offers more added values in contrast to Riba-based banks/institutions. (PV4)	Venkatesh et al. (2012) Alfarizi & Ngatindriatun (2022) Modified to suit context

Table 3.
Survey Instruments and Sources (Continued)

No	Constructs	Items	Sources
6	Customer pressure	Customers influence me to use fintech financing. (CUSP1) After gaining easier and faster access to finance, I can give a more efficient services to customers. (CUSP2) After gaining easier and faster access to finance, I can quickly complete orders made by customers. (CUSP3)	Ali Abbasi et al. (2022) Modified to suit context
7	Competitive pressure	I was influenced by other entrepreneurs who have tried fintech financing. (COMP1) I was pressured/recommended by other entrepreneurs to use fintech financing. (COMP2) I want to be more competitive by using fintech financing. (COMP3) Business will be left behind if I do not use fintech financing. (COMP4) I will lose customers to other competitors if I do not use fintech financing. (COMP5)	
8	Perceived trust	I trust that fintech financing is safe to be used. i.e. data and personal information will not be exposed. (TR1) Fintech financing is provided by experienced and skilled company. (TR2) Fintech financing used by Zakat institution is Shariah compliant. (TR3)	Bin-Nashwan (2022)
9	Shariah financial literacy	I know the obligation to engage in Shariah compliant financing as Muslims. (SFL1) I know Shariah financing prohibits Riba and Gharar. (SFL2) I know Shariah compliant financing products. (SFL3)	Pardiansyah et al. (2023) Alfarizi & Ngatindriatun (2022) Mansyur & Ali (2022) Majid (2021)
10	Behaviour intention to use Islamic Fintech financing	I intend to use fintech financing in the future. (BI1) If Zakat institution provides the required facilities, I will use fintech financing. (BI2) I will continue to use fintech financing as compared to traditional method. (BI3)	Venkatesh et al. (2003) Rahman et al. (2020)
11	Islamic Fintech financing Adoption	I use fintech financing to fund daily business operational cost i.e. salary, rent, utilities and raw material cost. (IFCA1) I use fintech financing to buy business equipment. (IFCA2) I use fintech financing to expand my business. (IFCA3)	Azman et al. (2021)

4.3. Method

The data are then analysed using IBM SPSS for preliminary analysis and Structural Equation Modeling (SEM) using Smart PLS to test the hypothesised relationships between the variables. The study utilises PLS-SEM to understand the complex structural model and thus explore theoretical extensions of established theories, aiming to enhance theory development and understanding. PLS-SEM's enhanced

statistical power is also ideal for exploratory study on emerging theories (Hair et al., 2019). Moreover, Ascarya & Tekdogan (2022) suggest that PLS-SEM be employed for Islamic economics and finance research.

V. RESULTS AND ANALYSIS

5.1. Analysis

The demographics of Asnaf entrepreneurs indicate that nearly 70% are females, with most falling between the ages of 31 and 49 and the majority having obtained SPM education. The entrepreneurs are evenly distributed between the central region (Selangor) and the east coast region (Kelantan and Terengganu). Approximately 64% of them earn RM1,500 or less. There appears to be a need for more awareness about psychometric assessments for business financing applications, with only 55% of respondents aware that they have completed the assessment. Interestingly, the remaining respondents opted for online financing applications even though they have completed the tests, and no such online financing application service has been provided yet, as confirmed by TERAS representing LZS. Additionally, 93% of these entrepreneurs are adopters of Islamic fintech.

Table 4.
Respondents Demography

Category		Frequency	Percent
Gender	Female	204	69.9
	Male	88	30.1
Age group (Years Old)	20 to 30	22	7.5
	31 to 40	111	38.0
	41 to 49	105	36.0
	50 to 59	45	15.4
	60 and above	7	2.4
	Less than 20	2	0.7
Marital status	Married	213	72.9
	Single	20	6.8
	Widowed/Divorced	59	20.2
Highest Education	Primary School/UPSR	24	8.2
	PMR/SRP	32	11.0
	SPM	143	49.0
	Diploma	28	9.6
	Malaysian Skills Certificate/Vocational	24	8.2
	STPM	17	5.8
	Undergraduate Degree	14	4.8
	Postgraduate Degree	6	2.1
	No formal education	4	1.4
States of origin	Selangor	148	50.7
	Kelantan	104	35.6
	Terengganu	40	13.7

Table 4.
Respondents Demography (Continued)

Category		Frequency	Percent
Business Years of Experience	Less than 1	10	3.4
	5 to 10	116	39.7
	1 to 4	119	40.8
	More than 10	47	16.1
Income	Less than RM1,000	88	30.1
	RM 1,000 – RM1,500	100	34.2
	RM1,501 – RM2,000	57	19.5
	RM2001 – RM2,500	17	5.8
	RM2,501 – RM3,000	14	4.8
	More than RM3,000	16	5.5
Registration status	Locat Authority (PBT)	55	18.8
	Partnership	13	4.5
	Sole Proprietor	168	57.5
	Unregistered formally	56	19.2
Sub-sectors	Car Repairs/Motorvehicle	7	2.1
	Clothing/Sewing	22	7.5
	Food & Beverages	198	67.8
	Grocery Store	10	3.4
	Handicraft	4	1.4
	Others	49	16.8
	Agriculture	2	0.7
Source of Funds (Can choose more than 1)	Zakat	292	100.0
	Own fund	134	27.3
	Amanah Ikhtiar Malaysia,	66	13.5
	Tekun	23	4.7
	Bank/Other financial institutions	12	2.4
	Others	12	2.4
	Ar-Rahnu	9	1.8
	Cooperatives	2	0.0
Islamic FinTech Credit Adoption Types	Online Business Assistance's application from Zakat	124	42.4
	Psychometric Assessment for Business Assistances' applications from Zakat	148	50.7
	No adoption	20	6.9

5.2. Evaluation of Measurement Models: Internal Consistency, Convergent Validity (CV), Discriminant Validity and Outer Loading

The data's internal consistency is assessed using composite reliability (CR), average variance extracted (AVE), and factor loadings. Cronbach's alpha, a number between 0 and 1, is also considered, with higher values indicating better internal consistency (Cronbach, 1951). Reports vary on acceptable alpha values, with some suggesting 0.70 to 0.95 and values over 0.95 indicating redundancy (Tavakol & Dennick, 2011). Some values exceed 0.95 in this case, but expert validation and

pre-testing confirm no redundancy. It is important to note that Cronbach's alpha measures consistency, not correlation. Leading science education journals find an alpha of up to 0.98 acceptable. Similar studies on Shariah Fintech utilization by microentrepreneurs also indicate CR or alpha values exceeding 0.95 (Azman et al., 2020). Each item's factor loading should be higher than 0.7 to represent the underlying construct accurately (Fornell & Larcker, 1981). All item loadings meet this standard except for CUSP1, which is consequently removed.

Table 5.
Measurement Model

Items	Loading	Cronbach Alpha	CR	rho-A	AVE
PE1	0.92	0.966	0.975	0.968	0.908
PE2	0.967				
PE3	0.966				
PE4	0.959				
EE1	0.972	0.968	0.979	0.968	0.939
EE2	0.971				
EE3	0.964				
SI1	0.874	0.924	0.941	0.964	0.762
SI2	0.928				
SI3	0.835				
SI4	0.929				
SI5	0.792				
FC1	0.955	0.954	0.967	0.955	0.878
FC2	0.948				
FC3	0.936				
FC4	0.908				
PV1	0.883	0.924	0.946	0.932	0.816
PV2	0.941				
PV3	0.851				
PV4	0.934				
CUSP1	0.63	0.963	0.982	0.927	0.749
CUSP2	0.962				
CUSP3	0.961				
COMP1	0.765	0.892	0.917	0.933	0.69
COMP2	0.746				
COMP3	0.896				
COMP4	0.894				
COMP5	0.843				
TR1	0.954	0.951	0.969	0.953	0.911
TR2	0.956				
TR3	0.954				
SFL1	0.942	0.938	0.96	0.942	0.89
SFL2	0.963				
SFL3	0.924				

Table 5.
Measurement Model (Continued)

Items	Loading	Cronbach Alpha	CR	rho-A	AVE
BI1	0.967	0.97	0.98	0.97	0.943
BI2	0.978				
BI3	0.969				
IFCA1	0.878	0.896	0.935	0.897	0.828
IFCA2	0.93				
IFCA3	0.921				

In terms of discriminant validity, Henseler et al. (2015) propose the Heterotrait-Monotrait (HTMT) ratio of the correlations, which is defined as the mean value of the item correlations across constructs relative to the (geometric) mean of the average correlations for the items measuring the same construct. Discriminant validity problems are present when HTMT values are high above the threshold of 0.90. All items pass the Fornell-Larcker Criterion, but a conservative approach is preferred, and the HTMT test is conducted (see Table 6).

Table 6.
Fornell-Larcker Criterion

	BI	COMP	CUSP	EE	FC	IFCA	PE	PV	SFL	SI	TR
BI	**0.971**										
COMP	0.726	**0.831**									
CUSP	0.788	0.694	**0.982**								
EE	0.708	0.663	0.718	**0.969**							
FC	0.776	0.724	0.745	0.782	**0.937**						
IFCA	0.82	0.71	0.766	0.651	0.713	**0.91**					
PE	0.781	0.697	0.708	0.797	0.762	0.696	**0.953**				
PV	0.802	0.729	0.772	0.676	0.791	0.733	0.753	**0.903**			
SFL	0.887	0.736	0.786	0.693	0.752	0.78	0.741	0.799	**0.943**		
SI	0.392	0.617	0.41	0.445	0.481	0.497	0.418	0.428	0.41	**0.873**	
TR	0.814	0.722	0.776	0.708	0.787	0.785	0.737	0.801	0.821	0.452	**0.955**

SFL has a problematic number (0.928). SFL1 is removed as the difference between the cross-loading towards its own construct and Behaviour Intention is less than 0.1, meaning it is loading well on both constructs, which is not supposed to be the case. Furthermore, it is almost similar to entrepreneurs' concern about the importance of Shariah compliance as measured by TR3. Although SFL2 has a lower cross-loading difference than SFL3, these Asnaf entrepreneurs are expected to be more familiar with Shariah compliant concepts rather than Shariah compliant products as they might be less financially literate. Therefore, SFL3 is deleted instead. The discriminant validity condition is fulfilled as per Table 7.

Table 7.
Revised HTMT Ratio

	1	2	3	4	5	6	7	8	9	10	11
BI											
COMP	0.735										
CUSP	0.815	0.714									
EE	0.731	0.686	0.744								
FC	0.806	0.761	0.777	0.813							
IFCA	0.88	0.772	0.825	0.7	0.771						
PE	0.807	0.715	0.733	0.824	0.793	0.747					
PV	0.844	0.783	0.817	0.715	0.841	0.806	0.795				
SFL	0.884	0.776	0.827	0.728	0.793	0.851	0.777	0.857			
SI	0.383	0.717	0.405	0.441	0.483	0.522	0.411	0.445	0.415		
TR	0.847	0.751	0.809	0.738	0.825	0.85	0.768	0.853	0.868	0.453	

5.3. Evaluation of Structural Models: VIF, R^2, PLSpredict

Collinearity issues must be inspected to avoid bias in regression results. In partial regression, VIF values, calculated using the latent variable scores of predictor constructs, indicate potential collinearity issues when they exceed five. No VIF values exceed five in the model, as per Table 8.

Table 8.
Collinearity Statistics - VIF

	VIF
BI -> IFCA	2.517
COMP -> BI	3.376
CUSP -> BI	3.473
EE -> BI	3.673
FC -> BI	4.336
FC -> IFCA	2.517
PE -> BI	3.877
PV -> BI	4.291
SFL -> BI	3.384
SI -> BI	1.693
TR -> BI	4.167

The R^2 value measures how much of the variance in each construct is explained by the model and is, therefore, a measure of the model's explanatory power (Shmueli & Koppius, 2011). As a guideline, R^2 values of 0.75, 0.50 and 0.25 can be considered substantial, moderate and weak (Hair et al., 2011; Henseler et al., 2009). In this research, the model accounts for 83.5% of the variance in the intention to adopt Islamic fintech financing and 68.5% of the variance in Islamic fintech financing adoption. These values are consistent with previous findings from Venkatesh et al. (2012) and Bakri, Aziz, et al. (2023). The high R^2 values can

be attributed to comprehensive exogenous variables, including organisational dimension and cultural factors. These values are below the threshold of 0.9, indicating no overfitting (Hair et al., 2019). In addition, to assess model fit the Standardized Root Mean Square Residual (SRMR) from the saturated model is reported. The obtained SRMR value of 0.071 is below the recommended threshold of 0.08 (Henseler et al., 2015), indicating an acceptable model fit, which must be < 0.10 or 0.08 (Hu & Bentler, 1999).

Table 9.
Coefficient of Determination R^2

	R-square	R-square adjusted
BI	0.841	0.835
IFCA	0.688	0.685
SRMR (Saturated Model)	0.071	

In PLS-SEM, their PLSpredict method produces holdout sample-based predictions. PLSpredict will measure the number of prediction errors. Another important yardstick of predictive power is Q^2, which is not a measure of out-of-sample prediction but rather combines aspects of out-of-sample prediction and in-sample explanatory power (Shmueli et al., 2016). In terms of Q^2, all endogenous constructs have large predictive relevance aligning with the rule of thumb. 0, 0.25, and 0.50 depict small, medium, and large predictive relevance of the PLS-path model.

Table 10.
PLS Predict Predictive Power

No	PLS-SEM_RMSE > LM_RMSE	PLS-SEM_RMSE < LM_RMSE	Predictive Power
1	All indicators of dependent constructs	None	Lack
2	Majority of all indicators of dependent constructs	Minority	Low
3	Minority or the same number	Majority or the same number	Medium
4	None	All indicators of dependent constructs	High

The model has medium predictive power, with BI2 and IFCA3 recording higher prediction errors for the PLS-SEM RMSE model versus LM_RMSE, which indicates that the majority have less prediction error. BI2 is removed due to its higher prediction error and because it is similar to FC's constructs in the sense that Asnaf would adopt fintech if they are given relevant facilities. It is decided to maintain IFCA3 as there is only a slight difference between both figures.

Table 11.
PLSPredict

	Q^2predict	PLS-SEM_RMSE	LM_RMSE
BI1	0.784	0.416	0.448
BI3	0.757	0.44	0.454
IFCA1	0.519	0.701	0.726
IFCA2	0.555	0.628	0.678
IFCA3	0.565	0.622	0.621

5.4. Statistical Significance and Relevance of the Path Coefficients

The last stage is to evaluate the statistical significance and applicability of the path coefficients after the model's explanatory and predictive powers have been demonstrated.

Seven relationships are significant at 0.01 and 0.1 significance levels (Table 12). Four relationships are insignificant (i.e., H2, H3, H4a and H6). The predictor of shariah financial literacy (β=0.405, p<0.01) shows the strongest relationship with behaviour intention to adopt Islamic fintech financing followed by performance expectancy (β=0.137, p<0.05) and trust(β=0.16, p<0.05). Subsequently, behaviour intention and facilitating conditions record stronger relationship towards adoption than SFL with (β=0.669, p<0.01) and (β=0.192, p<0.01), respectively.

Following Cohen (1988), we report effect sizes (f^2) for each relationship, where f^2 values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively. Although some relationships exhibit small effect sizes ($f^2 < 0.02$), they remain relevant as they contribute to the overall predictive validity of the model. This is supported by the Q^2 values, which indicate the predictive relevance of the PLS-path model (Hair et al., 2019). Small effect sizes do not necessarily indicate an insignificant finding, particularly in exploratory research.

Table 12.
Hypothesis Testing

		Std Beta	Std Error	T statistics	f^2	Decision
H_1	PE -> BI	0.137	0.139	2.093**	0.034	Supported
H_2	EE -> BI	0.01	0.011	0.176	0.000	Not Supported
H_3	SI -> BI	-0.027	-0.03	0.88	0.003	Not Supported
H_4a	FC -> BI	0.057	0.058	0.939	0.004	Not Supported
H_4b	FC -> IFCA	0.192	0.192	3.241***	0.046	Supported
H_5	PV -> BI	0.089	0.089	1.356*	0.007	Supported
H_6	COMP -> BI	0.062	0.063	1.156	0.01	Not Supported
H_7	CUSP -> BI	0.113	0.112	1.761**	0.03	Supported
H_8	TR -> BI	0.16	0.164	2.219**	0.028	Supported
H_9	SFL -> BI	0.405	0.398	6.18***	0.349	Supported
H_{10}	BI -> IFCA	0.669	0.667	11.55***	0.575	Supported

Note: ***p<0.01, **p<0.05, *p<0.10

5.5. Robustness Check

In this study, we followed Sarstedt et al. (2020) recommendations to test the robustness of our findings using non-linearity criteria as the effect size will be influenced by both the magnitude and the value of the exogenous construct in a non-linear relationship, statistically that will provide inaccurate results (Hair et al., 2018). This approach is also taken by Ghasemy et al. (2021) and Yusfiarto et al. (2022). Our results indicate that the non-significant quadratic effect supports the robustness of the linear relationship between constructs, as per Table 13.

Table 13.
Output of Quadratic Effect

Construct Relationship	Std Beta	P values	f^2	97.5% (BCCI)
QE (SFL) -> BI	-0.035	0.421	0.006	(-0.119, 0.053)
QE (FC) -> BI	0.007	0.866	0.000	(-0.067, 0.101)
QE (FC) -> IFCA	-0.023	0.483	0.002	(-0.09, 0.036)
QE (COMP) -> BI	-0.047	0.248	0.009	(-0.125, 0.032)
QE (TR) -> BI	0.118	0.089	0.044	(-0.01, 0.26)
QE (CUSP) -> BI	-0.072	0.179	0.014	(-0.197, 0.022)
QE (EE) -> BI	-0.017	0.625	0.001	(-0.092, 0.046)
QE (PE) -> BI	-0.024	0.562	0.003	(-0.12, 0044)
QE (BI) -> IFCA	-0.011	0.724	0.001	(-0.07, 0.056)
QE (SI) -> BI	-0.003	0.895	0.000	(-0.054, 0.05)
QE (PV) -> BI	0.013	0.812	0.000	(-0.093, 0.116)

5.6. Discussion

A significant finding is that Asnaf micro entrepreneurs regard Shariah financial literacy as the paramount criterion in adopting Islamic fintech. Most of these Asnaf are at least aware of the concept of Riba, or interest-based loans, which are explicitly forbidden. They emphasise the significance of Shariah compliance in products, operations, and administration. Yusof (2004) further substantiates that clients possess significant faith and confidence in Ar-Rahnu's operations, devoid of usury, exploitation, and deceit. Nearly 60% of respondents have been in the industry for five to over ten years. This fraction may elucidate the robust correlation between Sharia financial literacy and the intentions of seasoned entrepreneurs with greater familiarity with the financial sector.

The study highlights the substantial and beneficial impacts of performance expectancy (PE), trust (TR), customer pressure (CUSP), and price value (PV) on behavioural intention. This conclusion, corroborated by prior research, including Maulana (2023), indicates that PE and TR positively and significantly affect the behavioural intention of Muslim students to engage in online spending and charitable giving, hence underscoring the determinants of adoption intention. Customer and competitive pressures are crucial in shaping the intention to adopt. Abed (2020) asserts that proprietors and administrators of SMEs ought to adopt social commerce techniques to address client demands for closer relationships;

however, in this study's setting, prompt order fulfilment and efficient service are the most esteemed elements. The price value (PV) construct, encompassing cost and the perceived benefit of utilising the technology, influences Asnaf's decision to adopt fintech (Rahman et al., 2020). Nonetheless, it is important to highlight that the price value construct, although significant at a higher p-value threshold, exhibits little influence (less than 0.02) on BI based on effect size, possibly attributable to the minimal cost associated with required context usage. This hypothesis is weakly supported and is constrained by a minimal effect size.

Simultaneously, effort expectancy, social influence, facilitating conditions and competitive pressure exert no substantial impact. While PE is crucial, EE holds little significance for Asnaf, according to the findings of Yahaya & Ahmad (2019) regarding factors influencing Asnaf's acceptance of Zakat distribution through mobile banking. They consider Islamic fintech a beneficial finance tool that surpasses the challenges associated with its utilisation.

Regarding social influence, while family, friends, colleagues, and the community are anticipated to promote technology adoption, there may also be an implicit endorsement from the micro entrepreneurs themselves. Micro entrepreneurs may possess greater advancement than Asnaf, who are neither business proprietors nor typical individuals, given the prevalence of digitalisation in commerce. Furthermore, the community needs more awareness regarding the fintech activities undertaken by Zakat institutions, as indicated by the phone survey.

FC does not motivate Asnaf to adopt, likely because they wish to experience it first hand to ascertain the available technical aid (Venkatesh et al., 2003). This finding is corroborated by the observation that the majority of our respondents (51.4%) are between the ages of 41 and 60. Younger generations exhibit greater comfort with technology-driven training, whereas older generations favour experiential learning and mentorship over formal instructor-led methods (Urick, 2017).

The insignificance of competitive pressure is feasible, given that these entrepreneurs are currently encountering somewhat diminished levels of competitive pressure, potentially due to their ignorance of whether competitors have adopted such technology, which may stem from confidentiality among them.

A crucial element in forecasting an individual's action is behavioural intention. It may be inferred that an Asnaf entrepreneur's intention to utilise online financing and their responses to psychometric examinations positively correlate with their likelihood of securing financial help. This elucidates the most robust correlation between BI and IFCA. Another noteworthy discovery is that favourable conditions directly affect adoption, as entrepreneurs will only value the mentoring and technical advice acquired when they utilise fintech technologies. They would identify various resources for assistance and support inside the organisation and environment, eliminating barriers to further utilisation.

V. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

This study delves into the utilisation of Islamic fintech by Asnaf micro entrepreneurs to improve access to financing. Several crucial factors influence Asnaf micro entrepreneurs' intention to use Islamic fintech, including performance expectancy, price value, customer and competitive pressure, shariah financial literacy, and perceived trust. Additionally, intention and facilitating conditions impact actual usage indicating that there is a growing acceptance of Islamic fintech among Asnaf micro entrepreneurs. It is noteworthy that most of the UTAUT2 factors did not influence intention.

Zakat institutions' bold and timely move to establish fintech strategies will prepare these Asnaf for the era of digitalisation despite anticipated challenges of rejection by elder Asnaf. In comparison, many micro-financial and development financial institutions still rely on manual procedures and need more automated initiatives.

Raising awareness of these fintech initiatives to the public and Asnaf by the studied Zakat institutions is essential, especially in regards to the psychometric assessment, which over 40% of respondents did not realise they were answering. Continuous education for online financing applications is necessary to dispel negative stigma, particularly for those who believe the system would reduce application rates due to low digital literacy, despite evidence to the contrary. Over time, it is hoped that other Zakat institutions will follow MAIK, LZS, and MAIDAM's lead in engaging with Islamic fintech, as Asnaf place high importance on Shariah-compliant aspects of financing, technology, and administration.

Furthermore, providing technical assistance to these entrepreneurs for establishing new applications is crucial. For instance, MAIK placed kiosks and officers in selected mosques to facilitate financing applications. Another important consideration is the appointment of Chief Technology Officers/Chief Information Officers as top management by MAIK and MAIDAM. To kick-start similar initiatives, establishing a technology unit team with a direct report to the CEO could be a viable move.

5.2. Recommendations for Practitioners and Regulators

Based on the findings, practitioners and regulators should prioritise awareness building initiatives that clearly communicate how fintech applications improve efficiency, effectiveness, and convenience for micro-entrepreneurs. Such initiatives may include integrated online and offline campaigns, engagement with village-level community leaders, and structured sharing sessions featuring successful entrepreneurs. While limited awareness may partly explain the insignificance of social influence observed in this study, informal word-of-mouth within close-knit communities remains a powerful driver of adoption decisions.

In addition, systematic assessments of entrepreneurs' needs and expectations through surveys and feedback mechanisms are recommended to guide targeted policy and platform development. As some entrepreneurs may be unaware of competitors' digital capabilities, industry-wide benchmarking of Islamic fintech adoption among Asnaf entrepreneurs across different states would provide

valuable insights and encourage competitiveness. Regulators should also continue to oversee fintech platforms administered by Zakat institutions, as such oversight enhances perceived security and trust, thereby mitigating concerns related to governance and mismanagement. Moreover, structured education programmes on Shariah financial literacy should be expanded, with advanced modules tailored for experienced entrepreneurs and foundational training designed for those with limited prior exposure.

5.3. Recommendations for Future Research

Future research may employ longitudinal designs to examine the relationship between behavioural intention and actual usage over time, allowing for a more accurate assessment of sustained adoption as fintech initiatives mature. As this study focused on Asnaf micro-entrepreneurs in the central and east coast regions of Malaysia, extending the analysis to other regions would enhance the generalisability of the findings. Additionally, future studies could incorporate alternative technology adoption frameworks and explore mediating and moderating relationships to further enrich understanding of Islamic fintech adoption behaviour.

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