

Assessing the Level of Digital Technology Use and Readiness Among Micro-Entrepreneurs from Low-Income Backgrounds

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ABSTRACT

The rapid advancement of digital technology has significantly increased the importance of using digital tools in business management and marketing practices. To remain competitive in a dynamic market environment, it is essential for today's entrepreneurs to develop readiness in terms of skills, cognitive capacity, and technological tools to adopt digital technologies. This assumption is equally relevant to the growth and sustainability of micro-entrepreneurs from low-income backgrounds, particularly those receiving business assistance. Guided by the Technology Acceptance Model (TAM), this study assesses the level of adoption of digital technology and readiness among micro-entrepreneurs from this group. TAM is a widely used model for how users come to accept and use new technology, focusing on individual internal motivational factors, such as perceived usefulness and ease of use. A survey methodology was employed to collect the necessary data. The participants were micro-entrepreneurs classified as poor and needy who had received business capital support from the Negeri Sembilan Islamic Religious Council, funded through zakat-based resources. The findings indicate that the usage of digital technology is at a moderate level, while the readiness to adopt it is relatively high, with mean values of 3.578 and 4.023, respectively. ANOVA analysis reveals that skills readiness ($p = 0.022$, $p < 0.05$) and cognitive readiness ($p = 0.04$, $p < 0.05$) are significantly associated with the extent of digital technology utilization. The results indicate that the possession of relevant skills and a positive mindset regarding the benefits of digital technology play a key role in determining its usage in business operations. These results highlight the need for targeted training programs aimed at enhancing digital competencies among low-income entrepreneurs. Strengthening these capacities is essential to support business sustainability and growth. This study aligns with the first Sustainable Development Goal (SDG) on poverty eradication, emphasizing the role of zakat optimization through productive distribution and the integration of modern technologies.

KEYWORDS: Technology, Entrepreneur, Low-income, Zakat, Technology Acceptance Model (TAM)

Received 8 August 2025; Revised 1 September 2025; Accepted 13 October 2025

Doi: <https://doi.org/10.59953/paperasia.v4i5b.792>

1. INTRODUCTION

According to Hang and Kim (2025), digital technology encompasses a diverse array of intelligent systems, including cloud computing, among others, the Internet of Things (IoT), and machine learning. Such technologies collectively facilitate automation, information dissemination, and connectivity. Operating through various platforms and devices designed to collect and process data, they link with applications via the internet or other systems to enhance strategic performance and promote efficient resource utilization. Hang and Kim (2025) further argue that organizations with advanced digital infrastructures are better

positioned to adapt to dynamic business environments and achieve superior performance outcomes. This is because advanced digital infrastructure, such as the Accounting Information System, enables efficient and effective interactions between firms and all their internal and external stakeholders, while enhancing the business capacity for data collection, information processing, and increased transparency throughout their operations.

In this evolving technological landscape, artificial intelligence (AI) has emerged as a sophisticated subset of digital technology. AI represents a recent advancement in computer science, involving systems

that simulate human intellectual processes to enhance efficiency and performance across various sectors. The core objectives of AI include replicating human intelligence, solving complex knowledge-based tasks, enabling machines to perform functions traditionally requiring human cognition, and fostering systems that can learn and adapt autonomously (Ghosh & Arunachalam, 2021). AI technologies respond intelligently to user input, mimicking human thought processes and decision-making. Increasingly, AI is recognized as a transformative force with broad applications in industries such as business, defense, aerospace, and healthcare. In the business context, AI enhances operational efficiency, supports automation, and facilitates data-driven decision-making, including for micro-entrepreneur groups. Strategically integrating AI into business operations can improve competitiveness, particularly in volatile and complex markets. Moreover, AI adoption has the potential to replace or augment human functions, especially in roles constrained by cost or limited capacity. In this study, the distinction between information technology and AI is not the central focus. Rather, both are collectively considered under the umbrella of digital technology, reflecting their interconnected functions and contributions to contemporary business practices. These terms are used interchangeably to define the scope of digital technology within the study context.

In today's rapidly changing business environment, entrepreneurs must be equipped to harness advancements in digital technology to ensure sustainable growth and remain aligned with ongoing technological transformations. This imperative also applies to micro-entrepreneurs, particularly those participating in entrepreneurship programs targeted at asnaf from the poor and needy categories (Adnan et al., 2021; Meerangani et al., 2023). It is assumed that this group experiences increasing pressure to integrate digital technologies into their businesses due to income constraints and growing market competition. They differ from ordinary micro-entrepreneurs in terms of the struggles and hardships they experience in life, which in turn limit their capital and exposure to technological investment opportunities. Nonetheless, digital integration remains critical for enhancing cost efficiency, operational effectiveness, and long-term competitiveness in increasingly saturated markets. This necessity aligns with the views of Ramdan et al. (2020) and Hang and Kim (2025), who highlight the profound impact of technological advancements on all business sectors, including micro, small, and medium enterprises (MSMEs).

Zakat is one of the fundamental pillars of Islam, obligatory for all Muslims who meet the eligibility requirements as outlined in the Qur'an (Ibrahim et al., 2023; Bahri et al., 2023). The Qur'an also identifies the

eligible recipients of zakat, collectively known as asnaf. There are eight categories of asnaf, with the poor being further classified into two distinct groups: fakir and miskin, each reflecting different levels of poverty. The fakir (needy) refers to Muslims who have no property or income, or whose means fall short of 50% of their basic needs and those of their dependents (Ibrahim et al., 2023). In contrast, the miskin (poor) refers to Muslims whose assets or income cover more than half, but not all, of the needs of themselves and their dependents (Ibrahim et al., 2023). Zakat distribution to asnaf falls into two categories: consumptive, which provides short-term assistance to meet basic needs, and productive which aims to promote long-term economic empowerment for the asnaf (Bahri et al., 2023). Business capital assistance is one form of productive zakat distribution, where eligible recipients from the poor categories receive financial support to initiate or grow micro-enterprises, with the aim of improving their long-term economic well-being (Meerangani et al., 2023; Bahri et al., 2023). This study focuses on low-income entrepreneurs classified as asnaf, who have received zakat-funded business assistance through the asnaf entrepreneurship program.

This paper aims to examine the level of digital technology usage and readiness among micro-entrepreneurs from low-income backgrounds participating in a zakat-funded entrepreneurship program in Malaysia. This study seeks to provide insights into how entrepreneurs from disadvantaged economic groups in developing countries are responding to the adoption and integration of digital technologies in their business operations. Additionally, the findings are expected to inform the development of more effective entrepreneurship programs aimed at fostering resilient and competitive businesses among low-income entrepreneurs. Such contributions are particularly relevant to achieving the United Nations Sustainable Development Goal (SDG) 1 on poverty eradication by enhancing the effective use of zakat resources alongside the adoption of digital technology. In short, zakat-based capital provides an essential resource for the asnaf to empower their long-term economic status through sustainable business ventures, while the adoption of digital technology enhances the efficiency and effectiveness of their operations.

2. LITERATURE REVIEW

2.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a well-established and widely applied theoretical framework in the study of technology adoption and implementation, particularly in the context of digital business (Taherdoost, 2018; Gayathri & Buvaneswari, 2019; Schorr, 2023). TAM has evolved through continuous validation and refinement, resulting in three distinct versions: the original TAM, TAM2, and TAM3, each enhancing its

explanatory power in different contexts. According to Taherdoost (2018) and Gayathri and Buvaneswari (2019), TAM was developed by Davis (1986) as an adaptation of the Theory of Reasoned Action (TRA), which had earlier been developed by Fishbein and Ajzen in 1975. Davis identified two dominant factors influencing the acceptance or rejection of new technology systems among users (Schorr, 2023). Consequently, the original version of TAM, pioneered by Davis, proposed that individual acceptance of technology is determined by two main factors: perceived usefulness and perceived ease of use, as illustrated in **Figure 1**.

Perceived usefulness refers to the degree to which a person believes that using a particular technology will enhance their task performance, while perceived ease of use denotes the degree to which a person believes that using the technology is easy to use. These constructs form the core of TAM, which suggests that a user's acceptance of technology is shaped by these two beliefs. These beliefs then influence their attitude and behavioral intention to use the technology.

The Technology Acceptance Model (TAM) has undergone several refinements through continuous validation, leading to the development of TAM2. In this second version, social influence and cognitive instrumental processes were introduced as factors influencing users' intentions prior to actual usage behavior. In the third version, TAM3, the construct of attitude toward usage was removed, as empirical testing failed to confirm a consistent correlation between this construct and both perceived usefulness and perceived ease of use. Instead, both perceived usefulness and ease of use were found to be strongly associated with the behavioral intention to use. The most significant advancement in TAM3 compared to previous versions is its emphasis on the determinants of

perceived ease of use, including individual differences, system characteristics, social influence, and facilitating conditions. Accordingly, this study adopts the TAM framework as the theoretical foundation, particularly in identifying the relevant constructs to be measured: the actual usage behavior and digital technology readiness. In this study, the concept of digital technology readiness has been operationalized by linking 'perceived usefulness' to cognitive readiness, 'perceived ease of use' to instrumental readiness, and 'behavioral intention to use' to digital technology skills readiness.

"Perceived usefulness" refers to the extent to which an individual perceives digital technology adoption as necessary for their business within the current business environment. In this study, it is measured by cognitive readiness, which is defined as the existing mental state or belief system held by the individual (Parasuraman, 2000). The state of mind regarding digital technology adoption can be either positive or negative, and it influences actual efforts or behaviors (Venkatesh & Davis, 2000; Da Silva et al., 2023). Meanwhile, "perceived ease of use" reflects the extent to which entrepreneurs can utilize available digital technology in their business, while taking into account potential limitations they may encounter. The most advanced technology would be meaningless if the community had restrictions on making use of such technology.

Therefore, instrumental readiness acknowledges the unique context of asnaf entrepreneurs, who need to manage limited resources and operate within a tight budget. Instrumental readiness refers to the availability and accessibility of physical resources such as devices, tools, gadgets, and internet connectivity necessary for digital technology adoption (Parasuraman, 2000; Da Silva et al., 2023).

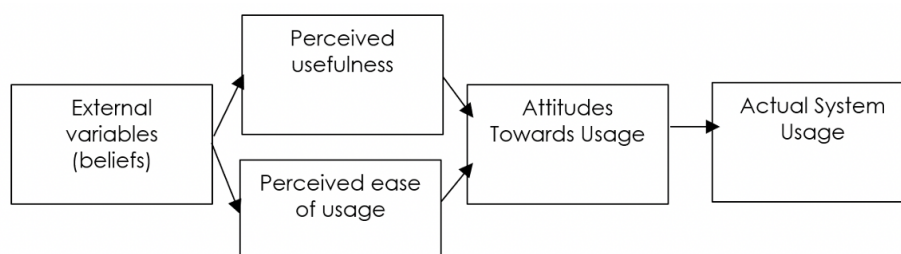


Figure 1: Original Version of Technology Acceptance Model (TAM) (Source: Schorr, 2023).

Finally, "behavioral intention to use" refers to an individual's capability to use digital technology, as reflected by their existing skills and motivation to acquire new competencies. Digital technology skills readiness represents the ability and willingness of individuals to engage with digital technology applications, either by utilizing their current skills or by showing interest in developing new skills (Compeau & Higgins, 1995; Venkatesh & Bala, 2008; Da Silva et al., 2023).

Although the Unified Theory of Acceptance and Use of Technology (UTAUT) was introduced by Venkatesh et al. (2003), TAM3 and UTAUT are regarded as complementary rather than competing models in explaining technology adoption behavior (Schorr, 2023). In fact, Davis, the originator of TAM, collaborated with Venkatesh in developing and testing UTAUT. UTAUT is a more comprehensive model, incorporating additional variables that capture technological and contextual developments relevant to its development. It introduces four core determinants of behavioral intention to use and user behavior: performance expectancy, effort expectancy, social influence, and facilitating conditions. Other moderating variables, such as experience, voluntariness of use, gender, and age, also influence technology adoption behavior. Access to resources and support systems is particularly relevant for older or less experienced users. Despite the existence of UTAUT, this study adopts TAM3 as the guiding theoretical model. This choice is based on its relevance to the research context, specifically focusing on micro-entrepreneurs who are zakat recipients. These individuals are typically in the early stages of business development and are more influenced by individual-level factors.

2.2 The Impact of Digital Technology Application on Small Business Performance

Digital technology has been found to significantly influence the performance of small businesses (Ramdan et al., 2020; Roman & Rusu, 2022; Larbi & Larbi, 2022; Faruque et al., 2024; Hang & Kim, 2025; Schwaeye et al., 2025). Hang and Kim (2025) reported that digitalization leads to improvements in information quality, followed by enhancements in system and service quality. These improvements ultimately contribute to better overall business performance in small enterprises. According to Roman and Rusu (2022), the benefits of business digitalization include reduced transaction costs, faster and better access to information, improved communication efficiency among employees, suppliers, and networks, and broader integration into both domestic and international markets. It also facilitates access to various business resources, such as financing, training, and opportunities for growth. Moreover, Omar (2023) found that increased access to and proficiency in digital technologies among B40 entrepreneurs in Malaysia have contributed to improvements in their

socioeconomic status. Digital tools have enabled these entrepreneurs to expand their markets and business performance. Additionally, digital technology skills offer a competitive advantage in managing businesses more efficiently and fostering innovation in product and service development. In a study on the use of Artificial Intelligence in Marketing (AIM) among small and medium-sized enterprises (SMEs), Larbi and Larbi (2022) found that AI positively impacts financial performance, customer relationship performance, internal business processes, and learning and growth outcomes within small businesses.

Although digital technology offers wide-ranging benefits, many micro and small firms still lag behind in adopting advanced technologies, especially when compared to larger enterprises (Ramdan et al., 2020; Roman & Rusu, 2022; Faruque et al., 2024; Schwaeye et al., 2025). For example, Roman and Rusu (2022) reported that only one-third of SMEs in Europe had implemented digital technologies in their operations. The primary barriers to adoption were identified as a lack of knowledge, skills, and financial resources. Ramdan et al. (2020) found that key factors influencing the adoption of digital platforms among micro and small enterprises include digital literacy, customer relationship development, and the establishment of a supportive digital ecosystem. Similarly, Huseyn et al. (2024) observed that small businesses led by owners or managers with higher education or professional qualifications, those employing IT-skilled personnel, and those providing IT training to their staff were more likely to implement AI in their operations. These findings emphasize the critical role of knowledge and technical skills in promoting the use of digital technologies within the small business sector. Faruque et al. (2024) further identified challenges to digital technology adoption and transformation among small businesses, including limited technological knowledge, insufficient financial resources, inadequate digital infrastructure, and a shortage of skilled workers.

Given these challenges, it is essential to understand the extent of digital technology usage and readiness among micro-entrepreneurs, particularly among lower-income background entrepreneurs in the developing countries context. This aligns with the recommendation by Schwaeye et al. (2025), who called for more research on country-specific phenomena in the adoption of AI among SMEs. Such research can help identify context-relevant factors influencing adoption and inform strategies and policies tailored to the unique characteristics of the target entities. Accordingly, the present study seeks to provide insights into how skills training and support programs can be improved to enhance the digital competencies of micro-entrepreneurs from lower-income groups, specifically those in the asnaf categories of the poor and needy

who have received capital support via zakat-funded entrepreneurship initiatives.

2.3 Application of Digital Technology in Business

According to Ghosh and Arunachalam (2021), the depth of artificial intelligence (AI) technologies' application can be categorized into three levels: weak AI, general AI, and strong AI. Weak AI refers to applications that are limited to task-specific systems performing predefined tasks without exhibiting cognitive abilities. This type of AI is the most prevalent and widely adopted globally, with examples including Apple's Siri, AlphaGo, Alexa, and similar virtual assistants. General AI refers to systems capable of performing tasks at a level comparable to human capabilities. However, such systems are not yet in existence, as no machine has yet fully replicated human thinking or decision-making (Ghosh & Arunachalam, 2021). Strong AI, by contrast, refers to machines that could outperform human capabilities and potentially replace humans entirely for certain tasks. While such advanced AI has not yet been developed, its emergence is plausible given the rapid pace of technological advancement. In the context of this study, the focus is on weak AI applications, as these are most relevant to the entrepreneurial context examined and reflect the current stage of AI adoption in Malaysia.

Ghosh and Arunachalam (2021) also distinguish between two types of AI assistance for humans: manual assistants (in the form of robots) and digital assistants (such as chatbots). Manual assistants are typically employed to perform high-risk, repetitive, or precision-based physical tasks in challenging environments. Digital assistants, on the other hand, are used for tasks involving human interaction, such as customer service, online troubleshooting, and the management of digital activities. In business operations, both types of AI tools play crucial roles in improving efficiency and performance. Manual assistants reduce production costs and enhance productivity, while digital assistants streamline communication processes, automate repetitive inquiries, and improve customer satisfaction. AI's unique value lies in its cognitive capabilities, namely its capacity to think and make decisions. However, in the context of this study, the distinction between general digital technology and AI is not a primary concern. Instead, AI is treated as one component of digital technology, considered beneficial and relevant to small business operations.

According to Hang and Kim (2025), one of the key functions of digital technology in business is strengthening organizational information systems, including Accounting Information Systems (AIS). These systems represent a form of weak AI, as they support routine tasks such as collecting and managing organizational data. AIS, for instance, functions to collect, process, store, generate, and report financial

data. The output generated from AIS enables objective and systematic evaluation of business performance, while also supporting key decision-making processes in areas such as investment, performance evaluation, and operational management. Roman and Rusu (2022) found that among SMEs in Europe, most digital adoption is still limited to basic technologies, such as the use of email and the development of business websites. In contrast, Larbi and Larbi (2022) investigated the use of AI in marketing (namely the Artificial Intelligence in Marketing) among SMEs in developing countries. Their findings highlight the adoption of Internet of Things (IoT) applications, Collaborative Decision-Making Systems (CDMS), virtual and augmented reality (VAR), and personalized product and service offerings tailored to customer needs. Other studies, such as Rita et al. (2025) and Masnita et al. (2024), further underscore the role of AI in enhancing marketing effectiveness through automation, targeting, and personalization strategies that improve customer engagement and business outcomes.

Thus, the literature has revealed a broad spectrum of digital technology applications in business, ranging from basic tools like email and websites to more specialized digital systems, such as AIS and AIM, which can be associated with weak AI. These technologies serve a variety of functions, from marketing and operational management to record keeping and decision-making, demonstrating their strategic value in enhancing business performance, efficiency, and adaptability to a rapidly evolving digital marketplace. This study fills the gap by exploring the level of usage as well as the readiness among entrepreneurs comprising of the lower-income and the marginalized group who have received specific business assistance from the relevant agency.

3. METHODOLOGY

This study employed a quantitative approach, specifically a survey technique, to collect data. The study population consisted of lower-income entrepreneurs categorized as *asnaf*, who participated in an entrepreneurship program organized by the Negeri Sembilan Islamic Religious Council in Malaysia. The sampling frame was based on a list of entrepreneurs from 12 districts within the state, amounting to 290 individuals. Referring to Krejcie and Morgan's (1970) sample size determination table, a sample size of 165 was deemed appropriate.

The online questionnaire was distributed to participants in 12 districts, with assistance from the agency. A Google Form link was shared with the entrepreneurs who had received business capital assistance from the agency. The link was disseminated through social media groups coordinated by the agency's Entrepreneur Unit. A total

of 32 complete questionnaires were collected after a one-month distribution period. This accounted for approximately 19% of the required sample size and was subsequently analyzed.

Given the exploratory nature of this study, descriptive statistical analysis was conducted to assess the level of digital technology usage and readiness within the specified group. Mean and standard deviation were used as measures of central tendency and dispersion, respectively, to describe the technology usage and readiness levels. Additionally, a one-way ANOVA was conducted to test for significant differences in digital technology usage across the three constructs of digital readiness.

4. ANALYSIS

Table 1 summarizes the demographic profile of the respondents. The majority of respondents in this study were women, totaling 27 individuals (84.4%), while only 5 respondents (15.6%) were men. Most of the entrepreneurs were in their mid to late adulthood age group. The largest age group consisted of individuals aged 38 to 43 years, comprising 11 respondents (34.4%). This was followed by the age groups 44 to 49 years and 50 years and above, each with 8 respondents (25.0%). Only 4 respondents (12.5%) were between the ages of 32 and 37, while the youngest respondent, aged between 26 and 31, accounted for just one individual (3.1%).

Table 1: Demographic profiles

Items	Frequencies	Percentage (%)
Gender:		
Male	5	15.6
Female	27	84.4
Age:		
26-31 years old	1	3.1
32-37 years old	4	12.5
38-43 years old	11	34.4
44-49 years old	8	25.0
50 years old and above	8	25.0
Marital Status:		
Single	0	0.00
Married	22	68.8
Others	10	31.3

Table 2: Digital technology usage

Construct/Item	Mean	Standard Deviation	Cronbach's Alpha
Digital Technology Usage:			0.858
1. I use communication and digital technologies available on my phone (e.g., SIRI, ChatGPT) to manage my business.	3.22	1.263	
2. I use communication and digital technologies to search for various types of information related to my business.	3.94	1.014	
3. I am proficient in using communication and digital technology applications in managing my business.	3.22	0.941	
4. I use technological tools (such as ChatGPT and Google Translate) to translate product or business information into English or other foreign languages.	3.28	1.198	
5. I use TikTok to promote my business/products/services.	3.53	1.135	
6. In addition to cash payments, I also accept cashless payments (such as QR codes and online bank transfers).	4.28	0.888	
Overall	3.578		

4.1 Level of Digital Technology Usage

Based on **Table 2**, the Cronbach alpha value (0.858) indicates that all items within this construct consistently measure aspects of digital technology usage. Overall, the level of digital technology usage is moderate, with a mean score of 3.578. This overall mean score of 3.578 suggests that the actual proficiency in using digital technology to ensure smooth and effective business operations is not yet optimal.

Item 6, which refers to the use of cashless payment methods such as QR codes and bank transfers, recorded the highest score (mean = 4.28, standard deviation = 0.888). This suggests that entrepreneurs have made efforts to adapt and adopt the latest developments in financial digital technology for their business transactions.

However, lower scores were recorded for Item 1 – "I use communication and digital technologies available on my phone (e.g., Siri, ChatGPT) to manage my business" – and Item 3 – "I am proficient in using communication and digital technology applications in managing my business." Both items recorded the lowest mean score of 3.22, with standard deviations of 1.263 and 0.941, respectively. This indicates that the entrepreneurs involved are still not fully exposed to or familiar with more advanced technological applications, including artificial intelligence (AI) in managing their businesses.

4.2 Readiness of Digital Technology Usage

The construct of readiness for digital technology adoption is represented by three dimensions: technological skills readiness, cognitive/attitudinal readiness (i.e., perceptions of the impact of technology on business), and instrumental readiness, which refers to limitations in access to digital resources. The skills dimension reflects whether entrepreneurs are capable of using basic or advanced digital technologies. The perceptual dimension captures their optimism or pessimism toward the application of digital technology in their business operations. Meanwhile, the resource limitation dimension represents structural or material constraints that hinder their ability to utilize digital tools. Taken together, these three dimensions provide a comprehensive picture of the extent to which entrepreneurs are both inclined and able to adopt digital technologies in the future as part of their business practices. Based on **Table 3**, the overall level of readiness for digital technology usage is relatively high, with a total mean score of 4.023. The detailed analysis of the technology readiness construct is as follows:

4.2.1 Skills Readiness – Mastery of Digital Technology Skills

According to **Table 3**, the overall mean score for mastery of digital technology skills is 3.615, with a Cronbach's alpha reliability coefficient of 0.789, indicating good internal consistency. The lowest mean score was recorded for Item 1, "I am capable of using online applications independently without assistance" (mean = 3.16), which suggests that some entrepreneurs still rely on external help when using digital technologies. However, Item 3, "I am interested in learning about

communication and digital technologies to market my products/services more effectively," recorded the highest mean in this construct (mean = 4.34), indicating a strong interest and positive attitude toward learning new technologies. This demonstrates that despite current low skill levels, there is a strong willingness among entrepreneurs to learn and adapt to technological advancements.

4.2.2 Cognitive Readiness – Perception of Technology's Impact on Business

According to **Table 3**, the overall mean score for cognitive readiness is 4.271, with a high Cronbach's alpha of 0.905, indicating excellent reliability. This reflects strong confidence among entrepreneurs in the benefits of technology use in business operations. Most respondents agreed that adopting up-to-date digital technology can help them manage their businesses more efficiently (Item 4, mean = 4.31). They also acknowledged that it is difficult to remain competitive without adopting technology that aligns with current market demands (Item 6, mean = 4.13). This suggests that entrepreneurs are not only attitudinally ready but also recognize the critical role of technology in ensuring business sustainability today.

4.2.3 Instrumental Readiness – Limitations in Digital Technology Devices

The overall mean for this construct is 4.266, with a very high Cronbach's alpha of 0.941 (see Table 3). This indicates that all items consistently measure the barriers entrepreneurs face in accessing or using digital technology.

Table 3: Digital technology readiness

Construct/Items	Mean	Standard Deviation	Cronbach Alpha
Skills Readiness – Proficiency in Using Digital Technology			0.789
1. I am capable of using online applications independently without assistance.	3.16	0.920	
2. I can quickly understand and become proficient in using digital technology applications when taught or demonstrated to me.	3.34	1.066	
3. I am interested in learning about communication and digital technologies to market my products/services more effectively.	4.34	0.787	
Overall	3.615		
Cognitive Readiness – Perception of Technology's Impact on Business			0.905
4. I believe that up-to-date information technology can help me manage my business more efficiently.	4.31	0.780	
5. I intend to adopt as much current digital technology as possible in my business practices, so as not to fall behind.	4.38	0.751	
6. I feel it is difficult to compete and survive in today's business environment without using the latest information technologies like other entrepreneurs.	4.13	0.793	
Overall	4.271		
Instrumental Readiness – Limitations in Access to Digital Technology/Devices			0.941
7. I feel the main barrier to using communication and digital technologies in my business is the high cost of smart devices.	4.34	0.902	
8. I feel the main barrier to using communication and digital technologies in my business is limited internet access.	4.19	0.998	
Overall	4.266		
Overall Readiness for Digital Technology Adoption	4.023		

Item 7, which states 'The main barrier identified is the high cost of smart devices' (mean = 4.34), and Item 8, 'Limited internet access' (mean = 4.19), received the highest mean scores in this section. These findings suggest that economic and infrastructure-related factors remain the primary obstacles to broader adoption of digital technology among small entrepreneurs. Despite a strong interest in adopting technology, entrepreneurs face external constraints largely beyond their immediate control, such as expensive equipment and limited internet connectivity. A one-way ANOVA test was conducted to compare the mean levels of Digital Technology usage across the three main dimensions of the Digital Technology Readiness construct: (i) skills readiness, which refers to proficiency in technology use; (ii) cognitive readiness, reflecting perceptions and attitudes toward technology's business impact; and (iii) instrumental readiness, relating to limitations in access to digital technology devices. The ANOVA was used to determine whether there were significant differences in mean digital technology usage among respondent groups categorized by their readiness levels. The results are presented in **Table 4**.

4.2.4 Skills Readiness – Mastery of Digital Technology Skills

The one-way ANOVA results in Table 4 indicate an F-value of 3.069 with a p-value of 0.022, which is below the conventional significance level ($p < 0.05$). This suggests a statistically significant difference in digital technology usage based on the respondents' proficiency levels. In other words, the higher the skill level in using digital applications, the more likely the entrepreneur is to actively use these technologies in their business operations. This reflects a positive relationship between skills readiness and technology adoption.

4.2.5 Cognitive Readiness – Perception of Technology's Impact on Business

For the cognitive readiness dimension, the one-way ANOVA results also showed a marginally significant difference in means ($F = 2.565$, $p = 0.040$), which is below the 0.05 significance threshold. This implies that perceptions of technology's effectiveness in business are associated with actual levels of digital technology usage. Respondents who reported stronger beliefs that technology facilitates operations and enhances competitiveness also tended to report higher levels of digital tool adoption in their business activities.

4.2.6 Instrumental Readiness – Limitations in Digital Technology Access

The analysis for the instrumental readiness dimension, which includes barriers such as the high cost of smart

devices and limited internet access, shows an F-value of 1.718 with a p-value of 0.158, indicating non-significance at the 0.05 level. This suggests that differences in digital technology usage are not statistically significant across groups with varying levels of resource limitations. While device and infrastructure constraints are acknowledged, they may not independently account for lower levels of usage. It is possible that limited digital skills reduce entrepreneurs' motivation to invest in advanced devices and internet infrastructure.

5. DISCUSSIONS

The descriptive analysis reveals that the level of digital technology use in business operations among low-income entrepreneurs remains moderate, primarily limited to basic tools and task-specific AI applications, particularly within the context of a developing nation. These findings corroborate and extend prior research by Ramdan et al. (2020), Roman and Rusu (2022), and Schwaeye et al. (2025), which similarly identified constrained digital adoption within marginalized business communities. Notably, the entrepreneurs exhibit a relatively high readiness to engage with digital technologies, encompassing three critical dimensions: skills, mindset, and access to digital devices and infrastructure. Mindset readiness emerged as the strongest dimension, reflecting a growing awareness among these entrepreneurs of digital technology's perceived potential to enhance operational efficiency and business performance.

Nonetheless, enduring challenges impede the full realization of digital integration, particularly concerning skills proficiency and access to affordable digital devices. These obstacles align with documented barriers in the literature (Ramdan et al., 2020; Roman & Rusu, 2022; Faruque et al., 2024; Da Silva et al., 2024; Schwaeye et al., 2025;), emphasizing that economic constraints and limited infrastructure remain significant inhibitors for micro and small enterprises. Within the context of this study, entrepreneurs perhaps inevitably prioritize essential living expenses over investments in digital technologies, reflecting a socio-economic reality that further limits technology adoption. Demographic factors, particularly age (predominantly above 38 years) and limited formal education, further contribute to slower acquisition and mastery of digital skills, even when entrepreneurs' express motivation to learn. This concurs with Huseyn et al.'s (2024) findings, which demonstrated that educational background significantly shapes the degree of digital readiness among entrepreneurs.

Table 4: ANOVA comparison of mean results

Independent Variable	Dependent Variable	F Test	Significant (p-value)
Digital Technology Usage	Digital Technology Usage Skills	3.069	0.022
	Impact of Technology in Business	2.565	0.040
	Limitation of Digital Technology Resources Usage	1.718	0.158

Through the lens of the Technology Acceptance Model (TAM), the observed alignment between digital usage and readiness levels underscores the integral role of individual capacities and attitudes in shaping technology adoption behaviors. The data indicate that digital technology use among these entrepreneurs is conditioned by three key factors that align with TAM constructs: mindset towards the benefits of digital technology in business, which reflects perceived usefulness; access to enabling devices, which relates to perceived ease of use; and skills competency, which corresponds to behavioral intention to use. Additionally, in the context of asnaf entrepreneurs, perceived ease of use is primarily associated with the availability of resources that determine their ability to use digital technology. For instance, without internet access and sophisticated devices, it is difficult for them to utilize any digital technology. Skill competency, on the other hand, becomes the internal force that ignites the actual use of digital technology. Thus, this study presents a unique application of TAM within a lower-income entrepreneur or asnaf entrepreneurs community, highlighting how resource availability shapes ease of use. This study contributes to the refinement of the Technology Acceptance Model by demonstrating that, within the asnaf community, perceived ease of use is not solely determined by system design or user interface, but by access to enabling infrastructure such as internet connectivity and sophisticated digital devices. This reconceptualization suggests that TAM may require contextual adaptation when applied to marginalized or resource-constrained populations.

Given these insights, future research should rigorously test the interrelationships between readiness dimensions and technology adoption using larger sample sizes and robust inferential methods such as structural equation modeling, hierarchical regression. Empirical validation of TAM within low-income entrepreneurial contexts will enrich understanding and guide tailored interventions to bridge digital divides in marginalized business sectors. The zakat agencies may implement intervention programs such as tailored digital skills training, subsidized access to devices, and mentoring initiatives for asnaf entrepreneurs with higher learning capacity, particularly among the younger age group. For older entrepreneurs who struggle with digital learning, zakat agencies may consider deploying digital support personnel to assist in the adoption of technology tailored to their business operational needs, especially in marketing and record-keeping.

6. CONCLUSION

The integration of digital technology has become imperative in contemporary business environments. Firms that successfully adapt to emerging technologies are more likely to experience enhanced operational

efficiency and improved marketing effectiveness, both of which contribute positively to overall business growth and sustainability. Findings from this study indicate that entrepreneurs from low-income backgrounds require strengthened digital competencies, access to appropriate technological devices, and adequate infrastructure to effectively adopt digital tools in their business operations. Moreover, in certain contexts, the provision of professional support services is essential, particularly for individuals who face barriers to acquiring new technological skills due to age or limited educational attainment. Such support is crucial to facilitate the meaningful integration of technology adoption into their business processes.

ACKNOWLEDGMENT

Acknowledgement is extended to the Malaysian Ministry of Higher Education for funding this research under the Fundamental Research Grant Scheme (FRGS) project reference number FRGS/1/2024/SS02/UKM/02/6.

REFERENCES

- Adnan, N. I. M., Roselam, M. A. C., Hamat, Z., & Furqani, H. (2021). The distribution of zakat fund to the poor entrepreneurs using micro finance. *International Journal of Academic Research in Business and Social Sciences*, 11(2), 231-240. <http://dx.doi.org/10.6007/IJARBSS/v11-i2/8666>
- Bahri, E. S., Ali, J., & Aslam, M. M. M. (2023). Successful of asnaf entrepreneur: The role of knowledge, skills, and ability. *AZKA International Journal of Zakat and Social Finance*, 4(3), 1-22. <https://doi.org/10.51377/azjaf.vol4no3.111>
- Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly*, 19(2), 189-- 211.
- Da Silva, L. F., Zitkus, E., & Freire, A. P. (2023). An exploratory study of the use of the internet and e-government by older adults in the countryside of Brazil. *Information*, 14(4), 1-22. <https://doi.org/10.3390/info14040225>
- Davis, F. D. (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and results* (Doctoral dissertation, Massachusetts Institute of Technology). Sloan School of Management.
- Faruque, M. O., Chowdhury, S. N., Rabbani, M. G., & Khan, N. A. (2024). Technology adoption and digital transformation in small business: Trends, challenges and opportunities. *International Journal for Multidisciplinary Research*, 6(5), 1-22.
- Gayathri, S. & Buvaneswari, P. S. (2019). The Technology Acceptance Model: A review of theories and models. *International Journal of Research and Analytical Reviews*, 6(2), 308-318.
- Ghosh, M. & Arunachalam, T. (2021). Introduction

- of artificial intelligence. In K, G. Srinivasa (Ed.) *Artificial Intelligence for Information Management: A Healthcare Perspective*, *Studies in Big Data* 88, 23-44. https://doi.org/10.1007/978-981-16-0415-7_2
- Hang, N. N. T., & Kim, N. N. (2025). The impact of digital technology on small and medium sized enterprises. *International Journal of Advanced and Applied Sciences*, 12(3), 28-38.
- Huseyn, M., Ruiz-Gándara, Á., González-Abril, L., & Romero, I. (2024). Adoption of artificial intelligence in small and medium-sized enterprises in Spain: The role of competences and skills, *Amfiteatru Economic*, 26(67), 848-866.
- Ibrahim, A. Z., Taha, R., Hamzah, M. A., Salleh, Z., Ahmad, N. & Azmi, R. (2023). Zakat capital assistance programme for asnaf entrepreneurs: Issues and challenges. *Journal of Business and Social Development*, 11(2), 64-71.
- Krejcie, R.V., & Morgan, D.W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607-610.
- Larbi, K. A. & Larbi, Y. A. (2022). The impact of artificial intelligence in marketing on the performance of SMEs in an emerging economy. *Journal of Entrepreneurship in Emerging Economies*, 16(5), 1-28. <https://doi.org/10.1108/JEEE-07-2022-0207>
- Masnita, Y., Ali, J. K., Zahra, A., Wilson, N., & Murwonugroho, W. (2024). Artificial intelligence in Marketing: Literature review and future research agenda Marketing. *Journal of Systems and Management Sciences*, 14(1), 120-140. [10.33168/JSMS.2024.0108](https://doi.org/10.33168/JSMS.2024.0108)
- Meerangani, K. A., Badrulhisham, A., Hamid, M. F. A., Hashim, S. N. I., Rameli F. P., & Hamzah, M. R. (2023). The effectiveness of entrepreneurial development program in transforming asnaf zakat. *International Journal of Academic Research in Business and Social Sciences*, 13(1), 1201--1211.
- Omar, F. I. (2023). Pengaruh akses dan kemahiran teknologi digital terhadap sosioekonomi usahawan B40 di Selangor. *Proceedings of the 10th International Conference on Management and Muamalah 2023 (ICoMM 2023)*, 151-157. <https://conference.uis.edu.my/icommm/10th/e-proceeding>
- Parasuraman, A. (2000). Technology readiness index (TRI): A multiple-item scale to measure readiness to embrace new technologies. *Journal of Service Research*, 2(4), 307-320.
- Ramdan, M.R., Abdullah, N.L., Isa, R.M., & Hanafiah, M.H. (2020). Meneroka faktor-faktor yang mempengaruhi penggunaan platform digital oleh perusahaan mikro dan kecil. [Exploring factors influencing the use of digital platform by micro and small enterprises]. *Jurnal Pengurusan*, 59, 37-51. <https://doi.org/10.17576/pengurusan-2020-59-05>
- Rita, P., Omeran, W., Ramos, R.F., & Costa, T. (2025). Exploring the applications of artificial intelligence in marketing: A topic modelling analysis. *Tourism and Management Studies*, 21(1), 39-55.
- Roman, A. & Rusu, V.D. (2022). Digital technologies and the performance of small medium enterprises. *Studies in Business and Economics*, 17(3), 190-203. <https://doi.org/10.2478/sbe-2022-0055>
- Schorr, A. (2023). The Technology Acceptance Model (TAM) and its importance for digitalization research: a review. In *Proceedings of the International Symposium on Teknikpsychologie*, 55-65. DOI:10.2478/9788366675896-005
- Schwaake, J., Peters, A., Kanbach, D. M., Kraus, S., & Jones, P. (2025). The new normal: the status quo of AI adoption in SMEs. *Journal of Small Business Management*, 63(3), 1297--1331. <https://doi.org/10.1080/00472778.2024.2379999>
- Taherdoost, H. (2018). A review of technology acceptance and adoption models and theories. *Procedia Manufacturing*, 22, 960-967. <https://doi.org/10.1016/j.promfg.2018.03.137>
- Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*, 39(2), 273-315. <https://doi.org/10.1111/j.1540-5915.2008.00192.x>
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186-204. <https://doi.org/10.1287/mnsc.46.2.186.11926>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478. <https://doi.org/10.2307/30036540>