Readiness and Resistance: Exploring Digital Adoption Behaviour among Traditional MSMEs in Mitc Ayer Keroh, Malacca, Malaysia

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ABSTRACT

The rapid diffusion of digital technologies has transformed business ecosystems globally, presenting new possibilities for operational efficiency, innovation, and market expansion for micro, small, and medium enterprises (MSMEs). Yet, traditional MSMEs, often characterised by resource limitations, manual practices, and deep-rooted cultural norms, continue to lag in digital adoption despite the clear potential benefits. This conceptual paper investigates the determinants of shaping digital readiness and behavioural resistance among traditional MSMEs in MITC Ayer Keroh, Malacca, a semi-urban, tourism-driven commercial cluster. Grounded in the Technology Acceptance Model (TAM) and extended with Trust as a critical construct, the study explores how perceived ease of use, perceived usefulness, and trust influence MSMEs' intentions to adopt digital tools. The paper synthesises extensive literature and integrates insights from contextual challenges highlighted in regional studies, including financial constraints, skills gaps, infrastructure limitations, and resistance to change. While this study does not employ empirical data, it offers a theoretically driven conceptual framework to explain adoption behaviour, identifies external barriers affecting adoption decisions, and proposes hypotheses for future quantitative testing. The findings emphasise the need for targeted support mechanisms, user-friendly technologies, policy interventions, and ecosystem-based digital capability programmes tailored to traditional MSMEs. This work contributes to digital transformation scholarship by contextualising TAM within a tourism-centred semi-urban Malaysian setting and provides a foundation for future empirical studies on MSME digitalisation.

Keywords: Digital adoption, traditional MSMEs, Technology Acceptance Model (TAM), Adoption Challenges, Adoption Opportunities

INTRODUCTION

The global transition toward digital economies has fundamentally reshaped how businesses operate, compete, and create value (Adams, 2025). The integration of digital tools, ranging from e-commerce platforms and mobile payments to cloud systems and data analytics, has increasingly become a prerequisite for survival, especially for micro, small, and medium enterprises (MSMEs) (Gao, 2023; Panduwinata et al., 2025). Digital technologies continue to reshape how modern businesses operate by helping them reach more customers, work more efficiently, and make better decisions. E-commerce platforms such as Shopee, Lazada, Temu, and other online marketplaces enable businesses to sell products far beyond their local areas, giving them the opportunity to enter regional and global markets. At the same time, social media platforms like Facebook, Instagram, and LinkedIn have become essential tools for marketing, customer interaction, and brand building. These platforms allow businesses to connect with audiences more directly and creatively.

Digital payment systems, including Touch N Go (TNG) eWallet, Boost, and GrabPay, also play an important role by simplifying and speeding up financial transactions. These systems provide secure, convenient payment options for both customers and businesses, making daily operations smoother. In addition, cloud computing

services such as Amazon Web Services (AWS) and Microsoft Azure help organizations manage data storage, processing, and application hosting more efficiently. Because these services are scalable, businesses can easily adjust their technology needs as they grow.

Data analytics tools like Google Analytics, Tableau, and Power BI help organizations turn raw data into meaningful insights. By collecting and analysing data, businesses can better understand customer behaviour, identify market trends, and make more informed decisions. These tools support strategic planning and overall performance in an economy where data-driven decision-making is becoming increasingly important.

In Malaysia, MSMEs account for over 96% of total business establishments and remain central actors in employment, value creation, and market resilience (Salim et al., 2022). Despite this economic significance, digital adoption within MSMEs remains uneven, with traditional businesses such as family-owned retail, food outlets, craft shops, and informal service providers still operating with minimal digital integration.

Malacca International Trade Centre (MITC) Ayer Keroh, located in Malacca, Malaysia is a semi-urban commercial zone intertwined with tourism activities, offers a compelling context for examining this digital gap. Although located within a rapidly developing district, many traditional micro, small and medium enterprises (MSMEs) here and across Malaysia exhibit low digital readiness and show behavioural resistance toward adopting digital innovations (Malik, Zakaria & Othman, 2025; Faudzi et al., 2024). These enterprises frequently encounter barriers related to financial capacity, limited digital literacy, outdated infrastructure, perceived risks, and deep-seated preferences for conventional business practices. Such constraints reflect broader national trends, where MSMEs remain at the early stages of digital transformation, despite increased government emphasis on digitalisation through initiatives such as the SME Digitalisation Grant, MyDigital Blueprint, and the Melaka Smart City Blueprint 2035 (UPEN Melaka, 2022).

Background of the Study

While digital adoption presents clear opportunities, including market expansion, enhanced competitiveness, operational efficiency, and improved customer engagement, many traditional MSMEs perceive digital tools as disruptive rather than enabling. Research highlights that MSMEs with limited knowledge and technical skills frequently struggle to select appropriate technologies, evaluate digital investments, or integrate tools into existing operations (Faruqe et al., 2024; OECD, 2021). These challenges are amplified in traditional business settings, where owners rely on legacy practices, have minimal exposure to digitalization, or fear technological complexity.

The COVID-19 pandemic accelerated digital uptake globally, but many Malaysian MSMEs, especially those in semi-urban zones, remained poorly equipped to shift operations online. Traditional firms in MITC Ayer Keroh, for example, faced difficulties implementing remote operations, digital payment systems, or online ordering due to infrastructure gaps, lack of training, and limited trust in digital tools. These findings reinforce the need for deeper contextual understanding of digital readiness versus resistance, particularly in sectors dependent on face-to-face transactions and tourist footfall.

A.1 Problem Statement

Despite national efforts, the digital divide persists among traditional MSMEs. The problem is not merely lack of access but also behavioural resistance, perceived complexity, inadequate digital competencies, and cultural attachment to manual processes (Kallamuenzer et al., 2025; Xiao, 2024; Iyanna et al., 2022). Although many micro-enterprises have internet access or use smartphones, most only adopt digital tools at a basic level, such as social media for marketing or simple messaging apps for customer communication. Comprehensive integration such as e-commerce, enterprise systems, cloud tools, or data analytics has remained limited.

Financial constraints further exacerbate the challenge. Traditional MSMEs often lack capital to invest in digital tools, cybersecurity, training, or upgrading outdated equipment. According to global and Malaysian studies, MSMEs consistently cite cost, skills shortages, and resistance to change as primary obstacles to digital transformation (Xue et al., 2022; Madgavkar et al., 2024).

Yet, despite these constraints, digital adoption holds substantial potential for MSMEs. For businesses in MITC Ayer Keroh, digital tools can expand customer reach beyond local tourists, enable online sales during low-traffic periods, automate administrative work, and enhance resilience against external disruptions. Thus, the paradox emerges: opportunities exist, but adoption remains low.

Therefore, this research examines why traditional MSMEs are slow to adopt digital tools despite evident advantages, focusing on the tension between readiness and resistance.

A.2 Digital Tools Adoption for Small Business

The integration of digital tools among Micro, Small, and Medium Enterprises (MSMEs) has become central to business continuity and competitiveness in today's rapidly evolving digital economy. In Malaysia, MSMEs constitute the backbone of the national economy, representing approximately 97.4% of total business establishments, contributing nearly 38% to GDP, and employing about half of the national workforce (National Entrepreneur and SME Development Council, 2024). Despite their significant economic presence, many MSMEs remain slow in embracing digital technologies, limiting their potential for efficiency, growth, and global competitiveness (Hendrawan et al., 2024 and Jaya & Kosadi, 2022). As digital transformation becomes increasingly embedded in business ecosystems, MSMEs must strategically integrate digital technologies into their operations to ensure sustained viability, agility, and long-term resilience (Satyawati et al., 2025; and Gao, 2023)

Digital adoption among Malaysian MSMEs, however, remains uneven and fragmented. Although 95.9% of businesses report using computers and 93.3% have internet access (Department of Statistics Malaysia, 2024), the majority are still at the early stages of digitalisation. Only 47.7% of MSMEs have engaged in e-commerce, and a mere 20% have adopted digital marketing tools (Mohamed & Mokhtar, 2025 and Hamid & Aliman, 2020). This indicates that while MSMEs technically operate within the digital landscape, the depth of digital utilization remains shallow, limiting their ability to capitalize on technological opportunities for business transformation and competitive advantage. This gap underscores the urgent need for more comprehensive digitalization strategies and enhanced digital capabilities within the sector.

Several structural challenges persist, hindering the widespread adoption of digital tools. Foremost among these is the financial constraint. MSMEs typically operate with limited budgets and often perceive investments in digital infrastructure, software solutions, and employee training as prohibitively expensive (Terumalay, 2024). Although various grants and incentives exist, access to funding for digital initiatives remains insufficient. Another major barrier is the digital skills gap. Research indicates that only 15% of the MSME workforce possesses advanced ICT skills, significantly impairing the ability of firms to implement, maintain, and optimize digital systems (SME Corp, 2020). Additionally, MSMEs in rural regions face infrastructural limitations such as unreliable internet connectivity, rendering digital transformation even more challenging in less developed areas.

In response to these challenges, the Malaysian government has implemented several strategic initiatives to support MSME digitalization. One notable effort is the RM50 million Digital Matching Grant introduced under Budget 2025, aimed at easing the financial burden of digital transformation (MOF, 2024). Complementing this, agencies such as the Malaysia Digital Economy Corporation (MDEC) have introduced programs including the SME Digitalisation Grant and the 100 Go Digital initiative, which provide financial support, advisory services, and digital training to small businesses (Azuar & Nehru, 2024). Moreover, digital skills enhancement programs, such as the Digital Skills Training Directory and eUsahawan have been instrumental in improving the digital literacy of entrepreneurs and workers, equipping them with the competencies needed to thrive in a digital-first economy (MDEC, 2025).

While Malaysian MSMEs play an indispensable role in national economic development, their pace of digital adoption remains insufficient to meet the demands of the contemporary knowledge-based economy. Despite widespread use of basic digital infrastructure, many MSMEs have yet to fully leverage advanced digital tools such as e-commerce platforms, data analytics, and digital marketing. These limitations stem primarily from financial constraints, skill shortages, and infrastructural disparities, particularly in rural areas. Nonetheless, government interventions and support from organizations such as MDEC offer promising opportunities to bridge

the digital gap. To remain competitive, MSMEs must proactively embrace digital transformation by investing in digital capabilities, cultivating a culture of continuous learning, and fostering innovation across their operations.

LITERATURE REVIEW

A. Introduction

Digital transformation has become a defining force shaping organisational competitiveness, economic resilience, and innovation capacity. For micro, small, and medium enterprises (MSMEs), the rapid evolution of digital tools presents opportunities to enhance operations, reduce costs, reach broader markets, and sustain business continuity. Yet, despite the global rise in digitalisation, the adoption rate among traditional MSMEs, especially in semi-urban contexts, remains significantly lower compared to modern enterprises or digitally native businesses. The review is structured as follows: digital tool adoption among small businesses; challenges that impede digitalization; opportunities enabled through digital transformation; and the Technology Acceptance Model (TAM), including its extended constructs that are used on this study as the theoretical foundation.

B. Digital Tool Adoption for Small Businesses

The digitalisation of MSMEs globally has accelerated due to increased digital infrastructure, the proliferation of mobile technologies, and broader access to digital platforms. Digital tools encompass a wide range of technologies, including e-commerce platforms, digital payment systems, social media marketing, customer relationship management (CRM), accounting software, cloud services, and data analytics tools.

In Malaysia, MSMEs represent 96.9% of total business establishments, contributing significantly to national GDP, employment, and exports. Despite this economic weight, digital adoption remains uneven. According to national reports, although over 90% of SMEs use computers and the internet, less than 50% engage in ecommerce, and an even smaller proportion utilise intermediate or advanced digital tools such as cloud systems or digital analytics (Department of Statistics Malaysia, 2024). This suggests that while micro, small, and medium enterprises (MSMEs) may appear present in the digital space at least superficially, they are not fully leveraging digital tools to drive meaningful business transformation and growth. Fundamentally, this gap highlights an urgent need for more advanced adoption strategies and a concerted effort to scale up digital capabilities across the MSME sector.

C. Digital Tools Adoption Challenges

Financial constraints remain one of the most significant barriers preventing micro, small, and medium enterprises (MSMEs) from embracing digital technologies and undertaking meaningful digital transformation. Many MSMEs operate with limited capital and are therefore unable to invest in essential digital tools, advanced technologies, and the supporting infrastructure required for digitalisation. This financial inadequacy restricts their ability to adopt critical systems such as cloud computing solutions, automation frameworks, and data analytics platforms, which are capabilities increasingly necessary for competing in a digital economy. Limited financial resources also hinder MSMEs from providing sufficient training to employees, resulting in a persistent skills shortage that undermines the effective deployment and management of new technologies. As mentioned by Xue et al. (2022), financial constraints affect not only the acquisition of technology but also the capacity to train personnel and maintain digital solutions. Consequently, inadequate financial resources severely weaken the competitiveness and long-term sustainability of small businesses (Xue et al., 2022).

Beyond financial limitations, MSMEs often struggle with technological incompetence, which presents another major obstacle to digital transformation. Many small enterprises face challenges in selecting appropriate technologies, implementing them effectively, and integrating them into day-to-day operations due to limited technical knowledge and experience. When technical competence is lacking, MSMEs may find it difficult to evaluate the return on investment (ROI) of digital initiatives, ultimately discouraging technology adoption (Thong, 1999). This challenge is further reinforced by evidence suggesting that insufficient technological expertise continues to impede digital implementation among MSMEs (Bin et al., 2021).

In most cases, MSMEs do not employ dedicated IT personnel and instead rely heavily on external consultants or vendors. However, these external parties may not fully understand the firm's operational needs or constraints,

resulting in suboptimal technology solutions. This lack of internal technical skills not only limits owners' understanding of the potential benefits of digital technologies but also contributes to fear and hesitation in adopting technology-driven systems that could enhance efficiency, customer engagement, and productivity. The rapid pace of technological advancements further exacerbates this issue, as many MSMEs struggle to keep up with evolving tools, standards, and industry practices. Consequently, these knowledge gaps not only delay digital transformation efforts but also lead to poor decision-making, inadequate technology strategies, and missed opportunities to gain a competitive advantage in increasingly digital markets.

The growing adoption of online platforms by MSMEs has also intensified the need for robust cybersecurity measures. While digital operations offer considerable benefits, they expose MSMEs to a wide range of cyber threats, including phishing, ransomware, data breaches, and other forms of cybercrime. Unfortunately, many MSMEs possess limited awareness or understanding of the cyber risks they face and lack the knowledge necessary to protect their digital assets. This lack of preparedness renders them highly vulnerable to malicious attacks.

As highlighted by Moore (2010), such vulnerabilities can have severe consequences, including unauthorized access to sensitive information, substantial financial losses due to fraud or theft, significant reputational harm, and a loss of customer trust. Unlike larger corporations with dedicated cybersecurity teams and substantial resources, MSMEs must navigate these threats with constrained budgets and limited expertise, making the implementation of comprehensive security measures even more challenging. This gap underscores the urgent need for enhanced awareness, targeted support mechanisms, and alternative cybersecurity solutions to ensure that MSMEs' digital transformation efforts do not compromise their security or long-term sustainability.

Resistance to change represents a pervasive barrier to technology adoption within MSMEs. Such resistance may arise from personal fears, entrenched organizational cultures, or a lack of understanding regarding digital transformation. Employees may feel intimidated by the complexity of new tools, struggle to adapt to unfamiliar systems, or fear job displacement. In organizations where traditional work practices are deeply ingrained, this resistance may be even stronger, making digital adoption more difficult. Limited knowledge of digital technologies and their benefits can also create distrust and scepticism among staff. According to Riswandi and Permadi (2022), effective change management characterized by clear communication, continuous training, and active employee participation, is critical for overcoming resistance and ensuring successful digital transformation.

D. Digital Tool Adoption Opportunities

Digital marketing strategies play a critical role in expanding visibility and market reach for micro, small, and medium enterprises (MSMEs). Through social media and targeted digital advertising, MSMEs can reach wider audiences at lower cost, enabling greater sales potential and brand exposure (Yuen, 2023). Digitalization also dissolves geographical limitations, allowing MSMEs to expand market presence without investing in multiple physical outlets. Online storefronts, therefore, enhance flexibility, reduce operational costs, and strengthen competitiveness in resource-constrained environments.

Digital tools further enhance customer service. By leveraging data analytics, MSMEs can personalize offerings, improve communication, and strengthen customer relationships (El Hilali et al., 2020). Cost-effective CRM systems help enterprises manage consumer interactions across multiple channels, while AI-based chatbots provide real-time responses that improve service efficiency. Predictive analytics also allow MSMEs to anticipate customer needs, resolve issues proactively, and build long-term loyalty which are key factors in gaining a competitive advantage in digital markets.

Operational efficiency is another major benefit of digitalization. Automation, integrated workflows, and cloud computing reduce costs, streamline processes, and support faster decision-making. As Rohmah & Komarudin (2023) highlight, such improvements free MSMEs from routine administrative burdens and allow them to focus on strategic growth. Cloud solutions offer scalability, remote collaboration, and real-time analytics, strengthening overall agility and long-term sustainability.

Digital technology also acts as a catalyst for innovation. MSMEs can use data analytics, cloud platforms, artificial intelligence, and social media to develop new products, services, and market-disrupting business

models. Innovation driven by digitalization generates unique value, new revenue opportunities, and a culture of continuous improvement (Bresciani et al., 2021). The ability to rapidly test, refine, and scale ideas enables MSMEs to adapt to changing markets and maintain competitive advantage.

E. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989), provides a relevant theoretical foundation for examining digital adoption behaviour among traditional MSMEs in MITC Ayer Keroh, Malacca. As an extension of the Theory of Reasoned Action, TAM identifies Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) as the primary determinants influencing users' attitudes, intentions, and actual use of technology. In the context of traditional MSMEs, many of which operate with limited technological exposure, PU reflects the extent to which owners believe digital tools can enhance business performance, while PEOU captures their perceptions of how effortless these tools are to learn and use.

TAM is especially suitable for this study because traditional MSMEs often evaluate digital tools based on practical benefits and perceived complexity. Its strong predictive power and simplicity enable a clearer understanding of why some MSMEs readily adopt digital solutions while others remain hesitant. Furthermore, external variables such as digital skills, financial readiness, infrastructure quality, and owner experience factors are highly relevant to MSMEs in MITC Ayer Keroh can influence both PU and PEOU, thereby shaping adoption behaviour (Lin et al., 2011; Taherdoost, 2018).

Given these considerations, TAM offers a robust framework for analysing how traditional MSMEs perceive the usefulness and ease of digital technologies, and how these perceptions drive or hinder their adoption decisions in an increasingly digitalised business landscape.

E.1 Perceived Ease of Use (PEOU)

Perceived ease of use (PEU) refers to the degree to which users believe that a digital system is effortless and convenient to operate (Tahar et al., 2020). Within the Technology Acceptance Model (TAM), PEU is a core determinant shaping users' attitudes and intentions toward adopting technology (Davis, 2013). This construct is especially relevant for traditional MSMEs in MITC Ayer Keroh, Malacca, where business owners often lack formal ICT training, dedicated IT staff, and prior exposure to digital tools.

Given these constraints, MSMEs are more likely to adopt digital technologies that are intuitive, simple to set up, and require minimal technical expertise. User-friendly tools such as QuickBooks, Zoho Books, Google Workspace, or mobile payment applications like TNG eWallet and GrabPay enable MSMEs to integrate digital solutions into daily operations without incurring high training or support costs. Their accessible interfaces, automated features, and built-in customer support reduce cognitive load and facilitate smoother adoption processes.

PEU also has strategic implications for digitalization among MSMEs in MITC. Tools that are easy to use accelerate implementation, lower operational costs, and minimize dependence on external IT service providers. Furthermore, mobile-friendly and cloud-based solutions allow SMEs to conduct transactions, manage finances, and coordinate operations seamlessly, which is critical for resource-constrained firms operating in dynamic market environments. During the COVID-19 pandemic, MSMEs with access to simple and intuitive platforms such as Shopee and Lazada were able to pivot quickly and maintain business continuity, illustrating the importance of PEU in shaping adoption outcomes (UNCTAD, 2021).

Within this study's conceptual framework, PEU directly influences MSMEs' digital adoption by reducing perceived barriers, enhancing confidence in technology use, and enabling faster integration of digital tools into traditional business processes. As such, PEU is positioned as a key predictor that helps explain variations in adoption behaviour among MSMEs in MITC Ayer Keroh.

E.2 Perceived Usefulness (PU)

Perceived Usefulness (PU) is a core construct of the Technology Acceptance Model (TAM) and refers to the degree to which individuals believe that using a technology will improve their job performance (Davis, 1989).

In the context of traditional MSMEs in MITC Ayer Keroh, Malacca, many of which face financial limitations and operate with conservative business practices, PU becomes a critical determinant of digital adoption. Owners and managers are more likely to implement digital tools when they perceive clear benefits in terms of productivity gains, cost reduction, operational efficiency, or improved customer engagement.

For these traditional MSMEs, perceived usefulness must be strong enough to justify investment in technologies such as e-commerce platforms, ERP systems, and digital payment tools. Prior studies show that MSMEs adopt such technologies when the expected benefits align with core operational needs, such as faster order processing, improved supply chain control, or enhanced customer relationship management (Awa et al., 2015; Thong, 1999). Due to business models and industry types vary across enterprises in MITC, PU is shaped by sector-specific priorities. For example, automation tools for manufacturing-based MSMEs and customer management tools for service-oriented firms.

PU also evolves over time. As MSMEs gain positive experience using basic digital tools, their confidence and willingness to adopt more advanced solutions increase. Training, vendor support, and peer influence further strengthen PU by clarifying the tangible value of digital transformation (Ifinedo, 2011). Additionally, local regulatory demands and digital ecosystem initiatives in Malacca shape how MSME owners perceive the usefulness of adopting digital technologies.

In the conceptual framework of this study, PU is expected to have a direct and positive influence on the digital adoption behaviour of traditional MSMEs in MITC Ayer Keroh. MSMEs that recognise the practical value of digital tools are more likely to integrate them into their operations, accelerating their transition toward competitiveness in the digital economy.

E.3 Trust as extension of TAM

Trust reflects an individual's willingness to rely on a technology or service provider based on positive expectations, despite uncertainty (Chuang et al., 2016). When integrated into TAM, trust provides a more complete explanation of digital adoption, especially for traditional SMEs in MITC Ayer Keroh, which often face resource constraints, low digital literacy, and weak cybersecurity capabilities.

MSMEs frequently perceive digital technologies as risky due to concerns about data security, system reliability, and vendor credibility. Trust reduces perceived risk and increases confidence in adopting tools such as cloud platforms, e-payment systems, and online marketplaces (Gefen et al., 2003). Owner-managers often rely on interpersonal trust, word-of-mouth recommendations, and perceived vendor integrity when making technology decisions, particularly in environments lacking strong cybersecurity frameworks (Pavlou, 2003; McKnight et al., 2002).

In this context, trust becomes a critical enabler of digital participation, allowing MSMEs to overcome fear of technological risks and engage confidently in digital transactions. However, gaps in cybersecurity awareness and perceived vendor reliability may limit trust, contributing to the digital divide between small enterprises and larger firms (Alshamaila et al., 2013).

E.4 Digital Adoption

Digital adoption refers to the process through which individuals and organizations integrate and utilize new digital tools, systems, and innovations in their daily activities. In the context of technology adoption research, it is often conceptualized as a dependent variable shaped by determinants such as perceived usefulness, perceived ease of use, trust, cost, social influence, and organizational readiness (Davis, 1989; Venkatesh et al., 2003). Understanding digital adoption is particularly important because it helps explain why certain innovations succeed while others fail to gain traction despite strong technical capabilities.

For traditional MSMEs in MITC Ayer Keroh, digital adoption is shaped by a combination of internal and external factors, including leadership support, workforce readiness, operational needs, and environmental pressures. The Technology Acceptance Model (TAM), along with complementary frameworks such as UTAUT and the Diffusion of Innovations theory, provides valuable insight into how MSME owners' beliefs, attitudes, and risk

perceptions influence their adoption decisions. These models emphasize that adoption depends not only on the functional advantages of digital tools but also on how users perceive their value, ease of use, and compatibility with existing work practices.

Moreover, digital adoption among MSMEs varies substantially across sectors and business types within MITC Ayer Keroh. For some firms, adoption may be driven by customer demand and competitive pressures, while for others it may depend on financial capacity, digital skills, infrastructure quality, or relevance to local business operations. These contextual variations underscore that digital adoption is a complex and dynamic process shaped by technological, socio-economic, and organizational conditions. *E.5 Operational Efficiency*

Efficient utilization of organizational resources is fundamental to enhancing firm performance, making operational efficiency a critical managerial priority (Dalwai & Salehi, 2021). High levels of operational efficiency enable firms to lower unit production costs, improve operating margins, and strengthen overall profitability (Derouiche et al., 2020). Empirical evidence further shows that firms demonstrating superior operational efficiency tend to outperform competitors in highly dynamic and competitive markets (Lee et al., 2019). Conversely, inefficient resource deployment can impede performance, weaken competitive positioning, and expose firms to escalating operational risks (Habib et al., 2022).

Within strategic management literature, the Miles and Snow typology provides a useful lens for understanding how firms pursue operational efficiency. Defender and reactor type firms emphasize operational control, process optimization, and cost efficiency as core mechanisms for sustaining competitiveness (Anwar et al., 2021). These firms typically operate within narrow product–market domains and compete primarily on cost, quality consistency, and internal efficiency (Ingram et al., 2016). In contrast, prospector- and analyser-type firms pursue competitive advantage through innovation, market expansion, and strategic responsiveness to emerging opportunities (Ghofar & Islam, 2015; Daft et al., 2020).

In the context of this research, operational efficiency becomes particularly relevant. Limited financial capacity, high operating costs, and manual business processes mean that even marginal improvements in efficiency can significantly enhance their competitiveness and market resilience. Digital tools, when effectively adopted, have the potential to streamline workflows, reduce redundancies, and elevate operational performance, making operational efficiency a crucial outcome variable within the conceptual framework of this study.

F. Research Objectives.

The primary objective of this study is to investigate the challenges and opportunities encountered by traditional small enterprises in their decision-making processes, with particular emphasis on the barriers that impede the adoption of digital tools. In line with this purpose, the study formulates the following research objectives:

1. To examine the current level of digital tool adoption among traditional small businesses operating in MITC Ayer Keroh, Malacca.
2. To identify the key challenges that hinder the adoption of digital tools within these enterprises.
3. To explore the opportunities and benefits that digital adoption can offer for business growth and longterm sustainability.
4. To determine and analyse the key factors influencing the adoption of digital tools by traditional small businesses.

G. Conceptual Framework.

In view of the above Research Objectives, this study aims to answer the following Research Questions:

1. What is the current level of digital tool adoption among traditional small businesses in MITC Ayer Keroh, Malacca?
2. What are the key challenges that hinder these businesses from adopting digital tools?
3. What opportunities and benefits does digital adoption offer for the growth and sustainability of traditional small businesses?
4. What factors significantly influence the adoption of digital tools among traditional small enterprises?

H. Conceptual Framework.

The Technology Acceptance Model (TAM) developed by Davis in 1989 serves as the underpinning theory and is arranged in the research framework as suggested in Figure 1. This figure illustrates that elements of TAM, which are Perceived Ease of Use and Perceived Usefulness, together with the element of Trust will directly affect technology adoption for MSMEs in this research context, which includes adoption of digital tools such as social media for marketing, e-commerce and any digital payment tools.

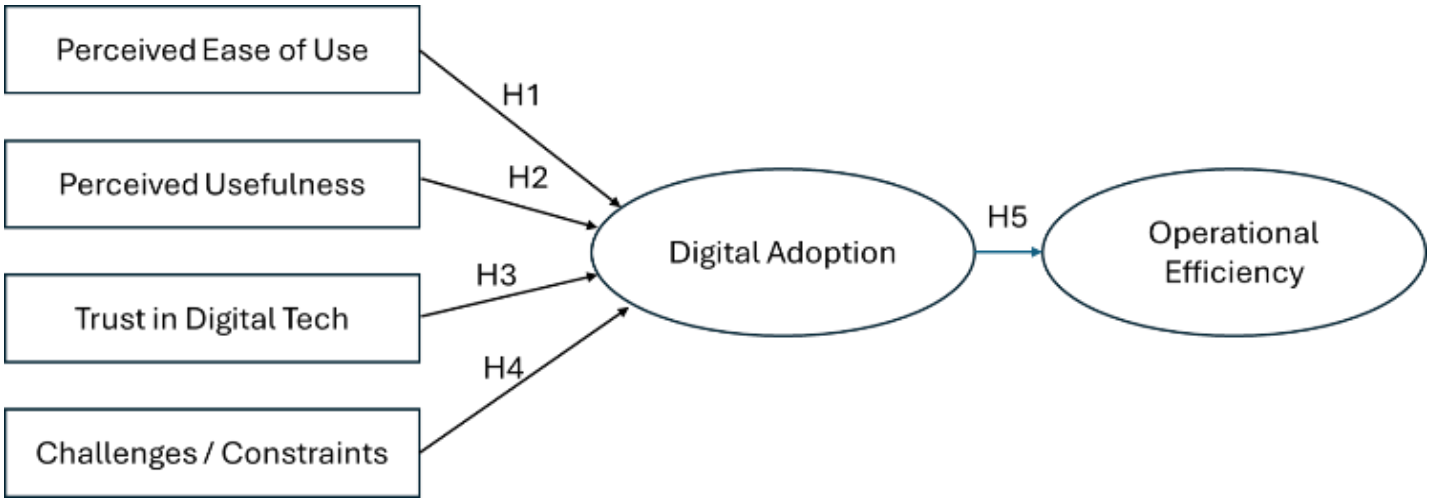

Fig. 1 Conceptual Framework of the study

Based on the theoretical foundation, the following hypotheses are proposed:

H1: Perceived Ease of Use positively influences the adoption of digital tools by traditional MSMEs.

H2: Perceived Usefulness positively influences the adoption of digital tools by traditional MSMEs.

H3: Trust in digital technologies significantly affects the adoption of digital tools by traditional MSMEs.

H4: Financial and technical constraints negatively affect digital adoption.

H5: Digital adoption improves operational efficiency.

These hypotheses will guide future quantitative empirical testing.

The literature reveals that digital adoption among MSMEs is shaped by a mixture of readiness (skills, perceived value, trust, simplicity) and resistance (fear, low competencies, cost, infrastructure). TAM remains a useful model for understanding adoption decisions, especially in contexts like MITC Ayer Keroh, where MSMEs operate with limited digital exposure. The extended TAM framework integrating trust and contextual constraints offers strong explanatory power for understanding why digital adoption progresses slowly despite clear economic benefits.

III. Research Methodology

A. Research Design

The study employed a descriptive research design using a quantitative approach supported by a structured questionnaire (Creswell & Creswell, 2018). Descriptive research is designed to identify and articulate the characteristics of variables of interest within a particular context, for example, describing the demographic and occupational attributes of employees, such as age, education level, and job status (Cavana et al., 2001). In essence, the primary purpose of a descriptive study is to develop a comprehensive profile or define the salient features of a phenomenon from multiple perspectives, whether individual, organizational, or industry-based (Cavana et al., 2001).

Furthermore, the study adopted a cross-sectional design, also referred to as a one-shot study, to address the research questions. In this design, data are collected at a single point in time, although the process may span several days, weeks, or even months (Creswell & Creswell, 2018; Shuaib et al., 2021).

B. Population and Sampling

Since an unidentified total number of MSMEs exists in MITC Ayer Keroh, Malacca, purposive sampling was employed to pick 100 respondents. In circumstances in which population size is indeterminate, nonprobability sampling techniques, such as purposive sampling, are suitable for guaranteeing that participants fulfil designated study criteria (Saunders et al., 2019). This methodology enables the research to concentrate on entrepreneurs possessing pertinent business experience, hence enhancing the quality and dependability of the results. Employing purposive sampling guarantees that the study concentrates on business owners with pertinent expertise, thus enhancing the research's focus and informativeness. This strategy is especially advantageous in scenarios where the population number is indeterminate, enabling researchers to obtain significant insights without necessitating a comprehensive population census (Ahmed, 2024).

The survey included only entrepreneurs with over three years of business experience guaranteeing significant insights. Enterprises with extensive operating histories are more prone to exhibit stable profit performance, facilitating the evaluation of social media's influence on their business operations. Engaging seasoned entrepreneurs improves the reliability of responses, since they may offer knowledgeable insights on digital tool adoption in their business operations.

Hair et al. (2018) assert that a sample size of 100 respondents is appropriate for exploratory research, especially for discovering trends and patterns. This figure reconciles data richness with feasibility, guaranteeing that results accurately represent real business processes while upholding a pragmatic approach to data collection.

C. Research Instrument

Primary data for this study were obtained through a rigorously designed structured questionnaire disseminated via Google Forms. The instrument was systematically organized into four sections, each formulated to elicit data that aligns closely with the study’s analytical and theoretical aims.

Section A gathered demographic characteristics using nominal-level measures to capture categorical attributes such as age, gender, ethnicity, business classification, and duration of business operation. These variables served to construct a detailed respondent profile and contextualize the heterogeneity present within the MSME population under investigation.

Section B operationalized the independent variables through interval-scale measurements, enabling respondents to quantify their extent of engagement with digital tools for advertising, brand visibility, and customer interaction. This structure provided a reliable mechanism for assessing the depth and breadth of digital adoption across traditional MSMEs.

Section C systematically examined the challenges confronted by traditional MSMEs during their transition toward digital tool utilization, whereas Section D focused on identifying the strategic and operational opportunities emerging from such adoption. Collectively, these sections provided an integrated analytical framework for understanding both barriers and enabling factors shaping digital transformation processes.

To ensure methodological consistency and enhance the precision of quantitative analysis, Sections B, C, and D employed a five-point Likert scale. Respondents indicated their degree of agreement with each statement using a scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). This scaling approach supported robust statistical examination and facilitated nuanced interpretation of respondent perceptions and behavioural tendencies.

D. Pilot Test & Plan for Data Collection

The data analysis procedure is grounded in a comprehensive, methodologically rigorous framework designed to examine the theoretical constructs underpinning the study and to empirically validate the relationships

hypothesised among them. This multifaceted process begins with an extensive and disciplined preparation of the dataset, which involves several layers of refinement, including detailed editing to correct inconsistencies, systematic coding to transform qualitative responses into analysable units, and categorical organisation to ensure conceptual alignment and analytical coherence. These preliminary steps are crucial for enhancing data quality and creating a reliable foundation for subsequent statistical procedures. Following this preparation, the refined dataset is imported into IBM SPSS, where initial descriptive and diagnostic analyses are conducted. These analyses include examinations of frequency distributions, measures of central tendency, variability indices, and diagnostic checks for potential data entry errors, multicollinearity, and other statistical anomalies that may compromise the integrity of the analysis.

Upon completion of these foundational diagnostic checks, the analytical process proceeds with the application of SmartPLS 4.0 to conduct Partial Least Squares Structural Equation Modelling (PLS-SEM). This advanced modelling technique enables the estimation of the structural model's predictive validity and the rigorous assessment of relationships among latent variables. PLS-SEM is particularly well-suited for studies that involve complex models, non-normal data distributions, and exploratory investigations, making it highly appropriate for this research. Through this technique, the study will evaluate both the measurement model, focusing on reliability, convergent validity, and discriminant validity, and the structural model, assessing path coefficients, effect sizes, and predictive relevance.

To further reinforce the robustness and scholarly credibility of the analysis, a comprehensive suite of data validation procedures will be implemented. These procedures include the systematic identification and treatment of missing values, which may involve deletion, imputation, or diagnostic assessment depending on the pattern and extent of missingness. The detection of irregular or inconsistent response behaviours, such as straight-lining, patterned responding, or abnormally rapid completion times, will also be conducted to ensure that all cases included in the analysis reflect genuine and attentive participation. Additionally, the dataset will be screened for extreme outliers using statistical techniques such as z-scores, Mahalanobis distance, and interquartile range criteria, as these anomalous values can disproportionately influence parameter estimates and distort inferential outcomes.

Beyond these validation steps, the dataset will undergo rigorous assessments of distributional normality, including tests of skewness, kurtosis, and visual inspections through histograms and Q-Q plots. Although PLSSEM does not require strict normality assumptions, understanding the distributional properties of the data is essential for interpreting results accurately and selecting appropriate supplementary analyses. Furthermore, common method variance will be evaluated using established approaches such as Harman's single-factor test and, if necessary, more sophisticated techniques such as the marker variable method. These assessments are critical for determining whether measurement artefacts or methodological biases may have influenced the observed relationships among constructs.

Taken together, these methodological safeguards, ranging from rigorous data preparation to advanced modelling techniques, serve to enhance the validity, reliability, and interpretive confidence of the study's findings. By adopting a multi-layered and systematic analytical strategy, the research ensures that its conclusions are grounded in a robust empirical foundation and contribute meaningfully to the scholarly discourse in this domain.

EXPECTED FINDING AND CONCLUSION

The objective of this study is to examine the current level of digital tool adoption among traditional small businesses operating within the MITC Ayer Keroh commercial zone in Melaka. Specifically, this research aims to identify the key challenges that hinder these enterprises from embracing digital technologies, while simultaneously exploring the opportunities and benefits associated with digital adoption for business growth and long-term sustainability. In addition, this study seeks to identify and analyse the critical factors influencing digital adoption behaviour among traditional MSMEs, thereby providing a comprehensive understanding of the readiness and resistance dynamics that shape their digital transformation journey.

This study contributes to existing knowledge by delineating the essential determinants of digital adoption that are particularly salient to traditional MSMEs. It further clarifies the relationships between these determinants,

such as readiness, perceived challenges, and perceived opportunities, and adoption behaviour, while integrating relevant theoretical perspectives on technology acceptance, MSME digitalisation, and organisational change into a unified analytical framework. Through this integration, the study extends prevailing theories by highlighting the contextual realities of traditional businesses operating in semi-urban commercial clusters such as MITC Ayer Keroh.

Moving forward, this research establishes a foundation for empirical validation and deeper investigation into the proposed relationships, thereby enabling more informed policy development, strategic planning, and capacity-building initiatives. The insights generated will support government agencies, industry practitioners, and MSME development stakeholders in enhancing digital readiness and improving performance outcomes among MSMEs in Malacca and, more broadly, across Malaysia.

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Conflict of Interest

The authors have no conflicts of interest to declare.

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