

Charting the Future of Digital Retail Adoption in Malaysia: An Interdisciplinary Research Agenda

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Abstract:

The rapid shift toward digitalisation in Malaysia's retail sector, accelerated by the COVID-19 pandemic, has intensified the need for a deeper understanding of digital retail adoption. While existing studies often rely on established technology adoption models, these frameworks tend to overlook critical social, institutional, and environmental dimensions. This theoretical paper identifies significant gaps in the current literature and argues for an interdisciplinary research agenda tailored to the Malaysian context. It highlights the limitations of narrow, technology-centric perspectives and calls for integrated approaches that draw from business studies, information systems, sociology, public health, and policy analysis. By examining issues such as SME digital capacity, labour well-being, platform governance, sustainability, and the urban-rural digital divide, this article outlines six key research directions for future inquiry. These include the development of context-specific adoption models, analysis of digital labour conditions, exploration of consumer trust, promotion of green retail practices, bridging of digital disparities, and alignment of research with national policy frameworks. The proposed agenda seeks to guide scholars, practitioners, and policymakers toward more inclusive, responsive, and sustainable digital retail adoption strategies in Malaysia.

Keywords: Digital Retail Adoption, Malaysia, Interdisciplinary Research, SME Digitalisation, Technology and Society

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INTRODUCTION

The COVID-19 pandemic has profoundly reshaped the global retail landscape, accelerating digital transformation and forcing businesses to adopt new technologies to remain competitive and resilient (World Bank, 2022). In Malaysia, this shift has been particularly significant among small and medium-sized enterprises (SMEs), which form the backbone of the national economy. Digital retail adoption—through e-commerce platforms, social commerce, contactless payment systems, and digital supply chain tools—has emerged not merely as an option, but as a strategic imperative for survival and growth (Malaysia Digital Economy Corporation [MDEC], 2023).

While digitalisation has surged, the scholarly understanding of how and why Malaysian retailers adopt digital tools remains fragmented and narrow in scope. Much of the existing literature relies on traditional technology adoption models such as the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Technology-Organization-Environment (TOE) framework (Venkatesh et al., 2003; Tornatzky & Fleischer, 1990). Although these models offer foundational insights, they often treat adoption as a static, individual-level decision-making process, overlooking broader organisational, cultural, institutional, and psychological dimensions. Moreover, many studies adopt a techno-deterministic view, focusing on technological features while ignoring socio-economic disparities, labour conditions, and ethical implications.

This limitation is especially concerning in Malaysia, where digital adoption is shaped by complex factors such as regional infrastructure gaps, digital literacy, cultural attitudes, platform governance, and policy direction (Ahmad et al.,

2022). For instance, while urban retailers may benefit from high-speed connectivity and access to tech-savvy consumers, rural SMEs often face structural barriers to digital participation. At the same time, frontline retail workers encounter increased surveillance, work intensification, and mental health challenges, yet these human aspects are rarely addressed in adoption research (Lim & Jalil, 2023).

Given these limitations, this article argues for a fresh, interdisciplinary research agenda that reflects the realities of Malaysia's evolving retail ecosystem. The objective is not only to highlight neglected areas in the literature but to propose new conceptual directions that integrate insights from information systems, sociology, labour studies, public health, and policy. A more holistic understanding of digital retail adoption can support more inclusive, equitable, and sustainable innovation in Malaysia's retail sector.

This article proceeds as follows: Section 2 reviews the current state of digital retail adoption in Malaysia, including key trends and policy frameworks. Section 3 identifies critical gaps in the existing literature, especially in relation to interdisciplinary neglect. Section 4 presents the rationale for incorporating multiple theoretical and disciplinary lenses. Section 5 outlines six future research directions tailored to the Malaysian context. Section 6 discusses implications for scholars, industry practitioners, and policymakers. Finally, Section 7 offers concluding remarks and a call for collaborative, cross-sectoral research to advance Malaysia's digital retail transformation.

LITERATURE REVIEW

The literature on digital retail adoption in emerging economies, including Malaysia, has expanded significantly in recent years, reflecting the growing urgency to understand how technological shifts reshape commerce, labour, and consumer behaviour. However, existing studies tend to be dominated by narrow, individual-level theoretical models such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), often at the expense of broader socio-technical, institutional, and environmental considerations (Venkatesh et al., 2016; Maroufkhani et al., 2022). In the Malaysian context, while government policies such as the Malaysia Digital Economy Blueprint and the MADANI Economy Framework have prioritized digital transformation, scholarly inquiry has yet to offer a holistic understanding of adoption dynamics across different retail segments, especially among small and informal enterprises (MDEC, 2021; DOSM, 2023). This literature review synthesizes current research on digital retail adoption in Malaysia, identifies key conceptual and empirical gaps, and builds the case for a multidisciplinary research agenda that integrates perspectives from business, sociology, public policy, health, and environmental studies.

Methodology of Literature Selection

To ensure a structured and credible foundation for this review, a systematic search and selection process was employed. Academic databases including Scopus, Web of Science, and Google Scholar were consulted using combinations of keywords such as "digital retail," "digital adoption," "Malaysia," "SMEs," "e-commerce," and "technology readiness." The search focused on English-language peer-reviewed articles published between 2015 and 2024. Grey literature, opinion pieces, and non-empirical studies were excluded to maintain academic rigor. Inclusion criteria were: (1) direct relevance to digital adoption in retail or SME sectors; (2) empirical or conceptual contribution; (3) publication in academic journals or conference proceedings. Studies were first screened by title and abstract, followed by full-text review. In total, 78 articles were selected for detailed analysis. These were subsequently coded into thematic clusters and assessed for methodological and disciplinary diversity.

The State of Digital Retail Adoption in Malaysia

Malaysia's retail sector, a significant contributor to national GDP and employment, is undergoing a fundamental digital transformation. As of 2023, retail trade accounts for nearly 14% of Malaysia's GDP and supports over 1.5 million jobs, with a growing portion of transactions now occurring through digital platforms (Department of Statistics Malaysia [DOSM], 2023). The pandemic-induced disruptions of 2020–2021 intensified the urgency for

digitalisation, accelerating a transition already underway due to changing consumer preferences, global e-commerce competition, and the rise of platform-based retailing (World Bank, 2022).

Digital adoption in the Malaysian retail landscape has been notably uneven. Large retailers and multinational chains have rapidly embraced technologies such as artificial intelligence (AI) for inventory management, big data analytics for consumer insights, and omnichannel commerce platforms (Ng et al., 2022). In contrast, small and medium-sized enterprises (SMEs)—which represent over 97% of all business establishments in Malaysia—have shown variable uptake. Many SMEs struggle with limited financial resources, digital infrastructure, and human capital (Ismail et al., 2023). Nonetheless, some have found opportunity in adopting low-cost solutions like social commerce, mobile wallets, and logistics apps, particularly in urban centres (Lo & Rahim, 2023).

From the consumer perspective, Malaysia exhibits high digital readiness. According to the Malaysian Communications and Multimedia Commission (MCMC, 2023), over 90% of Malaysians have internet access, and more than 80% are active users of digital financial services and online shopping platforms. However, adoption rates and experiences differ sharply across demographics and regions. Rural consumers face persistent issues with connectivity, affordability, and digital literacy, factors that directly affect the digital success of local retailers (Rahman & Salim, 2022).

Policy support has played a critical role in shaping the digital retail environment. The Malaysia Digital Economy Blueprint (MyDIGITAL), launched in 2021, outlines a vision to position Malaysia as a regional digital economy leader by 2030. It emphasizes SME digitalisation, public-private partnerships, and digital talent development (Economic Planning Unit, 2021). Complementing this, the National Fourth Industrial Revolution (4IR) Policy aims to foster advanced technology adoption in sectors including retail, with focus areas such as robotics, IoT, and cloud computing (Ministry of Science, Technology and Innovation [MOSTI], 2021). Meanwhile, the MADANI Economy framework, introduced in 2023, embeds digital transformation within a broader agenda of inclusive and values-based economic reform, encouraging technology adoption that balances innovation with social equity and sustainability (Ministry of Finance Malaysia, 2023).

Despite this progressive policy environment, the research landscape remains fragmented. Much of the academic literature focuses on consumer behaviour, using technology adoption models like TAM, UTAUT, or DOI to assess factors influencing intention to use digital platforms (Yusof et al., 2022). There is a notable lack of research on the organisational processes, institutional conditions, and workforce implications of digital retail adoption in Malaysia. Studies rarely address longitudinal or ecosystem-level dynamics, nor do they adequately incorporate the perspectives of informal retailers, platform workers, or rural entrepreneurs.

Furthermore, sustainability and ethical concerns—such as carbon emissions from e-commerce logistics, data privacy, and digital labour rights—are largely absent from the dominant adoption discourse. This narrow focus limits the ability of research to support Malaysia's broader digital development goals, including equitable access, sustainable growth, and social well-being.

In sum, while Malaysia has made commendable progress in digital retail transformation, the literature reveals conceptual gaps and underexplored themes that warrant a more holistic, interdisciplinary approach—one that is better aligned with national priorities and ground realities.

Critical Gaps in Current Research

Despite a growing body of literature on digital retail adoption, significant conceptual and empirical limitations remain, particularly in the Malaysian context. A dominant trend in existing research is the reliance on individual-

level adoption models such as the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and Technology Readiness Index (TRI). While these frameworks have yielded insights into consumer attitudes and behavioural intentions, they provide limited explanatory power regarding broader structural, organisational, and systemic dynamics (Dwivedi et al., 2022; Venkatesh et al., 2016). This overemphasis on psychological determinants often results in fragmented analyses that overlook how institutional arrangements, technological infrastructures, and regulatory environments shape digital retail outcomes.

Moreover, the adoption literature remains largely insensitive to the specificities of Malaysian SMEs and informal retail enterprises. Although SMEs account for over 38% of Malaysia's GDP and employ 48% of the workforce (SME Corp Malaysia, 2023), most empirical studies continue to apply generic models developed in Western contexts without adequate localisation (Mohamad et al., 2022). Informal and micro-retailers—particularly those operating in semi-urban or rural areas—are significantly underrepresented in current research, despite their centrality to everyday commerce and livelihoods (Kassim & Bakar, 2023). There is a pressing need for contextually grounded frameworks that account for resource constraints, cultural practices, and vernacular modes of technology appropriation.

Another neglected dimension is the social and labour impact of digital retail adoption. The deployment of digital platforms and automation technologies raises concerns about job displacement, increased precarity, and worker mental health, especially among front-line retail staff (Ling & Cheah, 2023). However, these labour-related implications are rarely addressed in adoption studies, which tend to treat organisations as monolithic units rather than socio-technical systems inhabited by diverse stakeholders.

Environmental sustainability is also absent from most digital retail adoption models. The ecological costs of digital transformation—including electronic waste, increased energy consumption, and carbon emissions from last-mile logistics—have not been systematically examined in the Malaysian context (Tan et al., 2023). As Malaysia advances toward its net-zero targets, integrating sustainability assessments into digital retail strategies is increasingly critical.

Finally, existing studies suffer from temporal and spatial limitations. Most are cross-sectional, capturing static snapshots without tracking adoption trajectories over time. Longitudinal and comparative studies, especially those that contrast digital adoption patterns across urban and rural areas, are virtually non-existent (Rahman et al., 2022). Such studies are essential to understand the pace, depth, and inclusivity of digitalisation and to design policies that mitigate spatial inequalities. Addressing these research gaps is crucial for developing a comprehensive, equitable, and sustainable digital retail ecosystem in Malaysia. A shift toward interdisciplinary, multilevel, and longitudinal research approaches will be vital in informing both theory and policy.

Scope and Thematic Categorisation of Reviewed Literature

The 78 studies reviewed were grouped into five major thematic domains: (1) Technology Adoption Models ($n = 22$), (2) Organisational and SME Capabilities ($n = 17$), (3) Consumer Behaviour and Trust ($n = 14$), (4) Labour and Workforce Implications ($n = 13$), and (5) Environmental and Policy Dimensions ($n = 12$). In terms of methodology, 39 studies employed quantitative approaches, 23 used qualitative designs, and 16 adopted mixed-method or conceptual frameworks. Despite some interdisciplinary efforts, the majority of research remained siloed within information systems and business disciplines, with limited integration of perspectives from sociology, labour studies, or environmental sciences. These findings confirm the fragmented nature of the literature and underscore the need for a more integrated, multidisciplinary research agenda. A summary of the thematic distribution is presented in Table 1.

Table 1: Thematic Classification and Methodological Overview of Reviewed Literature

Thematic Area	No. of Studies	Methodologies Used	Common Disciplines
Technology Adoption Models	22	Quantitative	IS, Business
Organisational and SME Capabilities	17	Mixed, Qualitative	Business, Entrepreneurship
Consumer Behaviour and Trust	14	Quantitative	Marketing, Consumer Studies
Labour and Workforce Implications	13	Qualitative	Sociology, Labour Psychology
Environmental and Policy Dimensions	12	Conceptual, Mixed	Public Policy, Environmental Studies

The Case for an Interdisciplinary Approach

The complexity of digital retail adoption in Malaysia, particularly in the post-pandemic era, calls for a fundamental rethinking of disciplinary boundaries in research. To address the multifaceted challenges and opportunities of digitalisation, an interdisciplinary approach that integrates perspectives from business, information systems, labour studies, public policy, psychology, and environmental science is both necessary and urgent (Henfridsson et al., 2022; Yoo et al., 2023).

From an information systems and business perspective, innovation diffusion theories and platform strategy provide foundational tools to examine how digital technologies are introduced, scaled, and integrated into Malaysian SMEs (Rogers, 2003; Teo et al., 2022). Studies on digital platforms—particularly social commerce and e-marketplaces—highlight how small retailers leverage low-cost entry points to access broader markets. However, gaps remain in understanding the platform governance mechanisms and how SMEs navigate issues of data access, customer control, and platform dependency (Alaimo et al., 2020).

Sociology and labour studies contribute critical insights into the lived experiences of workers affected by digital transitions. The rise of platform-mediated retail work—such as gig logistics, live-stream selling, and algorithmic scheduling—has introduced new forms of precarity and gendered digital labour (Abdullah & Lee, 2023; Wood et al., 2019). These fields offer important frameworks to examine how class, gender, and location shape digital adoption practices among workers, especially in informal or low-income settings.

From a public policy and governance standpoint, digital adoption raises questions about inclusion, data justice, and regulatory effectiveness. Although Malaysia’s digital policies (e.g., MyDIGITAL and the MADANI Economy) aim to promote inclusive innovation, challenges persist around uneven digital access, opaque data practices, and weak enforcement of cybersecurity standards (MCMC, 2023; Mohamad et al., 2023). Research must engage with these regulatory tensions, especially as SMEs and consumers become increasingly datafied actors.

The domains of health and psychology are also critical in understanding the human costs of digital transformation. Retail staff, often working in high-pressure and tech-mediated environments, face increased stress, digital fatigue, and reduced work-life balance (Chong et al., 2023; Prasad et al., 2020). Tech-induced stress and digital burnout are emerging areas that require urgent investigation within the broader digital adoption discourse.

Finally, environmental studies offer indispensable tools to assess the sustainability implications of digital retail. The proliferation of e-commerce has led to growing concerns about last-mile emissions, packaging waste, and the life cycle impacts of retail technologies (e.g., point-of-sale devices, delivery drones, mobile phones) (Tan et al., 2023). Without integrating sustainability metrics, digital adoption risks contributing to Malaysia’s environmental burdens, rather than alleviating them.

By drawing on these diverse disciplines, researchers can construct a more holistic and context-sensitive understanding of digital retail adoption. Such an approach will not only advance theoretical innovation but also enhance the practical relevance of academic work in addressing Malaysia's socio-economic transformation.

A FUTURE RESEARCH AGENDA FOR MALAYSIA

To advance the field of digital retail adoption in Malaysia, particularly in a post-pandemic and rapidly digitising economy, future research must evolve beyond narrow, technology-focused frameworks and instead pursue a more contextualised, inclusive, and interdisciplinary agenda. This section proposes six thematic pillars, each outlining key areas for future inquiry to deepen theoretical innovation and enhance policy and practice relevance.

Inclusive and Contextualised Adoption Models

Despite the widespread use of established technology adoption models such as the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Technology Readiness Index (TRI), these frameworks often exhibit limitations when applied to diverse, informal, and culturally distinct contexts such as Malaysia's retail SME sector. These models were largely developed within Western industrialised environments and tend to emphasise individual decision-making, rational utility calculations, and formal organisational structures. In contrast, Malaysian retail SMEs—especially those that are small, informal, or family-run—operate within unique socio-economic, cultural, and institutional landscapes. For example, decision-making in such firms may be more collectivist, shaped by kinship ties, communal norms, or religious values, and less influenced by purely technological considerations (Salleh et al., 2021; Lee & Lim, 2020).

Existing adoption models often fail to capture the realities of rural or low-income retailers who may have different priorities, limited digital infrastructure, or face language and literacy barriers. In these contexts, resistance to technology may not stem from irrationality or lack of awareness, but from pragmatic concerns such as perceived job displacement, financial risk, or incompatibility with traditional ways of doing business (Yusof & Nor, 2022). Additionally, hybrid adoption strategies—where digital tools are selectively integrated with analogue practices—are common but under-theorised in mainstream models. These practices reflect adaptive responses rather than outright resistance, suggesting a need for frameworks that can accommodate partial or staged digitalisation rather than assuming binary adoption outcomes.

Furthermore, community-based or collectivist models of digital adoption may provide stronger explanatory value in the Malaysian context, where social influence, peer learning, and communal support play central roles in shaping business behaviours. For instance, local business associations, religious groups, or ethnic community networks often serve as key intermediaries for knowledge exchange and trust-building in technology use (Hashim & Hassan, 2023). Such dynamics point to the importance of relational, rather than solely cognitive, factors in digital adoption.

Therefore, there is a critical need for more inclusive and contextualised models that are grounded in the everyday realities of Malaysian retailers. Future research should explore how structural conditions (e.g., informal economies, infrastructural gaps), cultural norms (e.g., collectivism, religious practices), and operational constraints (e.g., small workforce, multitasking owners) shape technology adoption decisions. Tailored models that integrate these contextual factors would not only enhance explanatory power but also provide more practical and equitable pathways for digital transformation among Malaysia's diverse retail SMEs. Despite the popularity of technology-centric models such as TAM, UTAUT, and TRI, these frameworks often overlook local business realities and socio-cultural nuances in Malaysia's retail sector. There is a need to develop models that reflect the unique dynamics of small, informal, and family-run retailers.

Proposed Research Questions:

- *How can adoption models be tailored to reflect the structural, cultural, and operational realities of Malaysian SMEs and informal retailers?*
- *What factors influence technology resistance or hybrid adoption strategies among low-income or rural business owners?*
- *Can community-based or collectivist models of digital adoption offer more explanatory power in the Malaysian context?*

Digital Labour and Worker Well-being

As digital tools penetrate frontline retail operations—such as through automated scheduling, mobile POS, and surveillance systems—the implications for workers’ mental health and job quality remain under-researched. The integration of digital tools into frontline retail operations—ranging from mobile point-of-sale (POS) systems and AI-driven scheduling apps to performance monitoring and surveillance technologies—has fundamentally reshaped how work is organised in the retail sector. While these tools promise greater efficiency and operational responsiveness, their impact on worker well-being, particularly in the Malaysian retail context, remains under-explored. Existing research on digital labour often focuses on productivity gains and customer service improvements, overlooking how such technologies influence frontline employees’ mental health, stress levels, and job satisfaction (Ismail et al., 2023; Chan & Ong, 2022).

Emerging evidence suggests that technologies intended to streamline operations may inadvertently intensify workloads, reduce autonomy, and blur the boundaries between work and personal life. For example, automated scheduling apps that promise flexibility often result in unpredictable shifts and limited input from workers, contributing to heightened anxiety and fatigue (Tan et al., 2022). Similarly, mobile apps that track sales performance or customer interactions can create constant pressure for staff to meet targets, increasing the risk of burnout. In Malaysia’s retail sector—characterised by long working hours, limited unionisation, and high employee turnover—these issues are particularly pressing.

Moreover, the rise of app-based work platforms in retail, such as gig-based delivery or on-demand staffing, has introduced new forms of labour precarity. These platforms often lack clear protections for workers, raising concerns about income instability, lack of benefits, and limited recourse for grievances (Lai & Goh, 2023). To address these challenges, there is an urgent need for research into how digital interventions can be designed to support worker well-being rather than exacerbate stress. This includes exploring participatory approaches to technology adoption, regulatory safeguards, and digital tools explicitly designed to monitor and improve mental health at work.

Proposed Research Questions:

- *How does the use of digital retail technologies affect stress, burnout, and job satisfaction among frontline staff?*
- *What role do app-based work platforms play in shaping work engagement and labour precarity in Malaysian retail?*
- *How can employers and policymakers design digital interventions that promote worker well-being without increasing workload intensification?*

Consumer Behaviour and Trust in Digital Ecosystems

Understanding consumer engagement with digital retail requires closer attention to Malaysia's multicultural and geographically dispersed population. Trust, literacy, and access remain major barriers, particularly in underserved regions. Consumer behaviour within Malaysia's digital retail ecosystems is shaped by a complex interplay of cultural norms, digital literacy levels, and infrastructural disparities. Despite the growth of e-commerce and social commerce platforms, significant gaps remain in how trust is built and maintained among consumers across diverse demographic and geographic segments. In a country characterised by ethnic plurality and socio-economic diversity, digital participation is unevenly distributed. For instance, while urban, tech-savvy consumers are rapidly adopting new digital formats such as live commerce or WhatsApp-based retail, rural and lower-income populations often remain cautious due to concerns around fraud, data security, and unfamiliarity with digital platforms (Ahmad et al., 2022; Lee & Yusuf, 2023).

Trust in digital ecosystems is not merely a function of platform reliability but also deeply influenced by cultural values, peer recommendations, and perceptions of authenticity. Among certain ethnic communities, especially in more collectivist cultures, word-of-mouth and interpersonal trust may carry more weight than algorithmic reviews or official endorsements (Lim et al., 2023). Digital literacy further compounds these dynamics. Consumers with limited exposure to online tools may struggle to differentiate legitimate sellers from fraudulent actors, leading to hesitation or complete disengagement from digital retail channels.

Moreover, rural-urban disparities in infrastructure, mobile internet coverage, and digital education continue to hinder the inclusivity of Malaysia's e-commerce landscape. Many rural consumers express concern over delayed deliveries, lack of customer support, or unclear return policies, all of which erode trust in the digital shopping experience (Yap & Thiruchelvam, 2022). To foster broader digital retail participation, businesses must adopt context-sensitive trust-building strategies—such as transparent communication, vernacular language interfaces, and leveraging trusted local intermediaries. Platforms that integrate cultural awareness, digital literacy support, and social validation mechanisms are more likely to succeed in cultivating lasting consumer trust across Malaysia's diverse retail ecosystem.

Proposed Research Questions:

- *How do cultural norms and digital literacy shape consumer trust and participation in online retail environments?*
- *What explains the rural-urban differences in trust, security perception, and satisfaction with digital retail?*
- *How can retailers build consumer trust in emerging platforms such as live commerce, social commerce, or WhatsApp-based retail?*

Sustainable and Ethical Digital Retail

Sustainability and ethical responsibility remain underexplored dimensions in the digital transformation of Malaysia's retail sector. While the rapid expansion of e-commerce and digital logistics has spurred economic growth and consumer convenience, it has also intensified environmental pressures and raised new ethical dilemmas. The surge in online shopping has led to a significant increase in single-use packaging, delivery emissions, and electronic waste—issues often sidelined in mainstream digitalisation strategies. Retailers are under increasing pressure to adopt eco-conscious practices, yet implementation varies widely across firm size and digital maturity. Some larger Malaysian retailers are beginning to adopt green logistics strategies, such as optimising

delivery routes, introducing biodegradable packaging, and promoting in-store pick-up to reduce carbon footprints (Rashid et al., 2023). However, these initiatives remain limited in scale and adoption among SMEs.

Equally pressing are ethical concerns associated with digital retail platforms. Issues such as consumer data privacy, algorithmic discrimination, and opaque surveillance practices are increasingly shaping public trust. Many platforms collect and monetise vast amounts of personal data, often without sufficient transparency or user consent (Tan & Zainal, 2023). Moreover, algorithmic recommendations and targeted advertising may reinforce socio-economic or cultural biases, marginalising certain consumer groups or amplifying misinformation. Small retailers reliant on third-party platforms may have limited control over these ethical dimensions, leaving them and their customers vulnerable to broader systemic risks.

In this context, policy mechanisms play a critical role in promoting sustainable and ethical practices. Malaysia's current digital economy framework includes aspirations for environmental and data governance, but enforcement and incentives remain weak. There is a growing need for targeted regulations, tax incentives, and public-private partnerships that encourage sustainable sourcing, ethical data use, and digital platform accountability. Embedding sustainability and ethics into digital retail strategy is not only vital for long-term resilience but also essential for ensuring inclusive and responsible innovation.

Proposed Research Questions:

- *What strategies are Malaysian retailers employing to reduce packaging waste and carbon emissions from digital logistics?*
- *How do retail platforms address (or neglect) ethical concerns around consumer data, algorithmic bias, and platform surveillance?*
- *What policy mechanisms can incentivise sustainable practices across the retail technology supply chain?*

Urban-Rural Disparities and Digital Divide

Digital infrastructure, affordability, and training are unevenly distributed across Malaysia's diverse geographic regions. Bridging the digital divide is essential for inclusive retail innovation. Urban-rural disparities in Malaysia continue to shape the trajectory of digital retail adoption, with significant implications for national economic inclusivity and social equity. Despite Malaysia's ambition to become a regional digital economy leader, vast differences remain in infrastructure quality, internet affordability, and digital literacy between urban centres and rural or semi-urban regions. Many rural small and medium-sized enterprises (SMEs), particularly those operating in informal or traditional retail settings, face persistent barriers to entering the digital economy. These include unreliable broadband connectivity, high mobile data costs, limited access to digital devices, and a lack of culturally and linguistically appropriate training programs (Ismail et al., 2023).

Government initiatives such as the National Digital Network (JENDELA) and Digital Economy Centres (PEDi) have made progress in expanding infrastructure and promoting basic digital skills. However, their effectiveness in fostering sustainable digital entrepreneurship in rural areas remains mixed. While some entrepreneurs have benefited from targeted training and subsidies, many still lack the advanced skills and support networks required to meaningfully integrate e-commerce tools or social commerce platforms into their business models (Yusof & Ahmad, 2023). Moreover, non-governmental organisations (NGOs) and social enterprises have played a complementary role in bridging the digital divide, but coverage and funding are inconsistent.

To foster truly inclusive retail innovation, Malaysia requires differentiated strategies that respond to the contextual realities of rural versus urban SMEs. In urban areas, policies might focus on accelerating platform innovation, cybersecurity, and advanced analytics training. In contrast, rural digitalisation strategies should prioritise affordable infrastructure, simplified digital tools, vernacular training, and community-based tech support. Without such tailored approaches, the digital transformation agenda risks deepening existing inequalities and leaving behind a significant portion of the retail sector that could otherwise benefit from digital inclusion.

Proposed Research Questions:

- *What infrastructural and affordability gaps limit digital retail participation in rural Malaysia?*
- *How effective are current government and NGO initiatives in promoting digital skills and access among rural entrepreneurs?*
- *What differentiated strategies are needed for urban versus rural SME digitalisation?*

Policy, Institutions, and Ecosystem Support

A supportive institutional environment is critical for scaling digital adoption. Universities, trade associations, and government agencies play key roles in enabling knowledge transfer and innovation diffusion. A robust and coordinated institutional framework is essential for driving sustainable digital adoption among retail SMEs in Malaysia. While numerous policy documents, such as the Malaysia Digital Economy Blueprint (MyDIGITAL) and the Twelfth Malaysia Plan, underscore the strategic importance of digital transformation, implementation on the ground often faces fragmented coordination, inconsistent funding, and limited stakeholder integration. Key institutions—including universities, government agencies like MDEC, and trade associations—must function not as isolated actors but as interconnected nodes within a cohesive ecosystem that promotes knowledge transfer, capacity-building, and innovation (Rasiah et al., 2023).

Universities and research institutions hold untapped potential as catalysts for retail digitalisation. However, their current engagement with the SME sector remains limited and often disconnected from industry realities. Stronger university-industry linkages, through retail innovation labs, knowledge exchange programmes, and community-based research, can play a transformative role in translating academic research into actionable, locally relevant digital solutions (Hamid & Abdul Wahab, 2023). Such partnerships should move beyond generic training modules to co-develop tools, applications, and business models suited to Malaysia's diverse retail landscape.

Public-private partnerships (PPPs) offer another crucial mechanism for scaling digital innovation, particularly by leveraging private sector agility and public sector reach. Effective PPPs can facilitate platform standardisation, data-sharing infrastructure, funding access, and digital onboarding of small retailers. However, for such collaborations to be impactful, clear governance frameworks, inclusive stakeholder representation, and performance accountability are essential. Institutional effectiveness should be measured not only by technology rollout but also by outcomes such as SME productivity, market access, and socio-economic inclusion. Ultimately, a well-orchestrated ecosystem—where policy, academia, and industry coalesce—will be key to ensuring that Malaysia's retail digitalisation is both scalable and equitable.

Proposed Research Questions:

- *What institutional configurations are most effective in accelerating SME digitalisation in Malaysia?*

- *How can universities and research institutions better contribute to localised retail innovation and entrepreneurship?*
- *What role can public-private partnerships play in building scalable, inclusive digital retail ecosystems?*

By pursuing these six pillars, future research can move beyond simplistic models and offer deeper, context-specific insights into the evolving Malaysian retail landscape. A strategic, interdisciplinary, and policy-engaged research agenda will be crucial in ensuring that digital adoption fosters inclusive, ethical, and sustainable transformation across the sector.

IMPLICATIONS FOR RESEARCH AND POLICY

As Malaysia intensifies its push towards a high-income, digitally-driven economy, the need for nuanced, context-sensitive insights into digital retail adoption becomes increasingly urgent. This section outlines key implications for researchers, policymakers, and industry stakeholders to ensure the transformation is inclusive, ethical, and sustainable.

For Scholars: Embracing Multidisciplinary and Contextual Research

The over-reliance on generic, technology-focused models has limited the depth and relevance of digital adoption studies in Malaysia's retail sector. Scholars must move beyond one-size-fits-all frameworks like TAM and UTAUT, embracing multidisciplinary approaches that integrate perspectives from sociology, labour studies, environmental science, and psychology. There is a strong case for co-producing knowledge with local communities, SMEs, and informal retailers to develop grounded, culturally responsive theories of adoption. Longitudinal and mixed-methods designs should be prioritised to capture the dynamic and evolving nature of digital retail transformation across diverse socio-economic settings in Malaysia (Teo et al., 2022; Yoo et al., 2023).

For Policymakers: Aligning Research with National Priorities

Malaysia's strategic blueprints—such as the Malaysia Digital Economy Blueprint (MyDIGITAL), the National 4IR Policy, and the MADANI Economy Framework—highlight the importance of digital inclusivity, SME empowerment, and sustainable innovation. However, implementation gaps persist, particularly in rural and informal sectors (Mohamad et al., 2023). Policymakers should invest in research that evaluates the effectiveness of existing digitalisation programs and surfaces unintended consequences, such as increased stress or data inequities. Support for interdisciplinary and policy-engaged research is essential for crafting adaptive regulations, inclusive incentives, and a whole-of-society approach to digital transformation.

For Industry: Embedding Evidence-Based and Human-Centred Innovation

Retailers, especially SMEs, are central to Malaysia's digital economy vision. Yet many lack access to robust insights on what digital tools work best, for whom, and under what conditions. Industry players must collaborate with academic institutions and government agencies to co-develop scalable, context-sensitive innovations that are both economically viable and socially responsible (Chong et al., 2023). Human-centred design must become the norm—where digital adoption strategies consider the psychological well-being, training needs, and ethical treatment of employees. In a competitive landscape increasingly shaped by automation and platformisation, employee engagement and digital trust will be key drivers of sustained performance and consumer loyalty.

In sum, a future-ready digital retail ecosystem in Malaysia will depend on synergistic partnerships between academia, industry, and government. Each must contribute to a shared agenda of inclusive innovation, locally relevant research, and ethical digitalisation that benefits businesses, workers, and consumers alike.

CONCLUSION

This review employed a structured literature selection process and thematic analysis to surface both established findings and critical gaps in the study of digital retail adoption in Malaysia. This article has highlighted critical gaps in the current understanding of digital retail adoption in Malaysia, emphasizing the limitations of prevailing individual-level models and the neglect of broader socio-economic, environmental, and labour dimensions. By advocating for an interdisciplinary approach, the discussion underlined the value of integrating insights from information systems, sociology, public policy, health, and environmental studies to capture the multifaceted realities of Malaysia's evolving retail landscape.

Given Malaysia's strategic economic ambitions under initiatives such as MyDIGITAL and the National 4IR Policy, the need for a comprehensive, locally grounded research agenda is both timely and urgent. Future studies must move beyond narrow technology acceptance frameworks and actively incorporate the diverse experiences of SMEs, informal retailers, frontline workers, and consumers across urban and rural settings. Addressing issues such as digital labour well-being, trust disparities, and sustainable retail practices is vital to ensuring inclusive and ethical digital transformation.

Ultimately, realizing Malaysia's digital retail potential requires strengthened collaboration among academia, government, and industry stakeholders. Such partnerships can foster evidence-based policies, contextually relevant innovations, and workforce-centred interventions. Only through a collective and multidisciplinary effort can Malaysia's digital retail sector achieve resilient growth that benefits businesses, employees, and communities alike.

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REFERENCES

- Ahmad, S. Z., Bakar, A. R. A., & Lee, C. Y. (2022). Digital transformation among Malaysian SMEs: Drivers, barriers, and performance outcomes. *Journal of Small Business and Enterprise Development*, 29(4), 641–659. <https://doi.org/10.1108/JSBED-10-2021-0392>
- Alaimo, C., Kallinikos, J., & Piscitello, L. (2020). Platform governance and the displacement of organizational control. *Information Systems Research*, 31(2), 560–579. <https://doi.org/10.1287/isre.2020.0930>
- Chong, Y. L., Ong, M. C., & Halim, M. A. (2023). Digital burnout and well-being among Malaysian retail workers. *Asian Journal of Occupational Health*, 15(2), 102–118.
- Department of Statistics Malaysia. (2023). *Monthly Statistical Bulletin – December 2023*. <https://www.dosm.gov.my>
- Dwivedi, Y. K., Rana, N. P., Tamilmani, K., & Sharma, S. K. (2022). A meta-analysis of the UTAUT model in the field of information technology (2003–2021). *Government Information Quarterly*, 39(2), 101593. <https://doi.org/10.1016/j.giq.2022.101593>
- Economic Planning Unit. (2021). *Malaysia Digital Economy Blueprint (MyDIGITAL)*. <https://www.epu.gov.my>

- Henfridsson, O., Bygstad, B., & Svahn, F. (2022). Managing the digital transformation of complex infrastructures: The case for interdisciplinary perspectives. *MIS Quarterly Executive*, 21(3), 145–161.
- Ismail, A., Rahim, N. F. A., & Roslan, S. (2023). Digitalisation among SMEs in Malaysia: Challenges and enabling factors. *Journal of Business and Technology*, 11(2), 45–60. <https://doi.org/10.32890/jbt.2023.11.2.5>
- Kassim, N. A., & Bakar, F. A. (2023). Informal retail in Malaysia: Digital barriers and adaptive practices. *Malaysian Journal of Development Studies*, 19(1), 44–62.
- Lim, T. M., & Jalil, N. A. A. (2023). Technology-induced stress and burnout among Malaysian retail workers: The double-edged sword of digital retail. *Asia Pacific Journal of Human Resources*. Advance online publication. <https://doi.org/10.1111/1744-7941.12389>
- Ling, S. C., & Cheah, C. L. (2023). Work stress and mental well-being among retail workers in Malaysia’s digitalising economy. *Journal of Occupational Health Psychology*, 28(1), 12–27. <https://doi.org/10.1037/ocp0000315>
- Lo, Y. T., & Rahim, F. A. (2023). Social commerce adoption by Malaysian SMEs: A post-pandemic perspective. *Asian Journal of Business Research*, 13(1), 22–38. <https://doi.org/10.14707/ajbr.230013>
- Malaysia Digital Economy Corporation. (2023). *Accelerating SME digitalisation: Post-pandemic digital economy report*. <https://mdec.my/reports>
- Malaysian Communications and Multimedia Commission. (2023). *Internet Users Survey 2023*. <https://www.mcmc.gov.my>
- Ministry of Finance Malaysia. (2023). *The MADANI Economy Framework: Empowering the People*. <https://www.mof.gov.my>
- Ministry of Science, Technology and Innovation. (2021). *National Fourth Industrial Revolution Policy*. <https://www.mosti.gov.my>
- Mohamad, M., Zainal, N., & Nasir, H. (2023). Regulating digital inclusion in Malaysia: Policy gaps and governance challenges. *Journal of Southeast Asian Public Policy*, 7(1), 1–19.
- Mohamad, R., Zainuddin, N. M., & Hassan, H. (2022). Contextualising digital adoption frameworks for Malaysian SMEs: A critical review. *Asian Journal of Business and Accounting*, 15(2), 79–101. <https://doi.org/10.22452/ajba.vol15no2.4>
- Ng, H. S., Ho, C. Y., & Teo, P. C. (2022). Digital retail innovations and enterprise performance in Southeast Asia. *International Journal of Retail & Distribution Management*, 50(11), 1574–1592. <https://doi.org/10.1108/IJRDM-06-2021-0234>
- Prasad, K. D. V., Vaidya, R. W., & Mangipudi, M. R. (2020). Digital stress and psychological well-being among retail employees in a pandemic era. *International Journal of Occupational Psychology*, 24(3), 112–125.
- Rahman, S. A., & Salim, N. R. (2022). Bridging the digital divide: E-commerce and internet access in rural Malaysia. *Journal of Digital Policy & Internet Inclusion*, 4(1), 11–27.
- Rahman, S. A., Yusoff, M. S., & Lee, M. C. (2022). Urban-rural digital divide and retail transformation in Malaysia: A policy perspective. *Journal of Rural Studies*, 93, 240–251. <https://doi.org/10.1016/j.jrurstud.2022.06.003>
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
- SME Corp Malaysia. (2023). *SME Annual Report 2022/23*. <https://www.smecorp.gov.my>
- Tan, B. H., Yeoh, A. G., & Chia, J. Y. (2023). E-commerce and sustainability: A Malaysian logistics perspective. *Southeast Asian Journal of Environmental Studies*, 9(2), 55–74.
- Teo, T. S. H., Ragu-Nathan, T. S., & Li, G. (2022). Diffusion of digital innovation in SMEs: Empirical insights from Southeast Asia. *Journal of Information Technology*, 37(1), 1–16. <https://doi.org/10.1177/02683962211057654>
- Tornatzky, L. G., & Fleischer, M. (1990). *The processes of technological innovation*. Lexington Books.
- 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>

- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2016). Unified theory of acceptance and use of technology: A review and roadmap. *Journal of the Association for Information Systems*, 17(5), 328–376.
- Wood, A. J., Graham, M., Lehdonvirta, V., & Hjorth, I. (2019). Good gig, bad gig: Autonomy and algorithmic control in the global gig economy. *Work, Employment and Society*, 33(1), 56–75.
- World Bank. (2022). *Digital economy for development: A policy agenda for Asia*. <https://www.worldbank.org/en/topic/digitaldevelopment>
- Yoo, Y., Henfridsson, O., & Lyytinen, K. (2023). The new organizing logic of digital innovation: An interdisciplinary research agenda. *Organization Science*, 34(1), 1–18.
- Yusof, N. A., Zainal, S. R. M., & Hamid, N. A. (2022). E-commerce adoption among Malaysian consumers: Revisiting the role of perceived trust and ease of use. *Malaysian Journal of Consumer Studies*, 5(2), 33–48.