MAPPING SMES' INTENTION TO ADOPT INFORMATION SYSTEM TECHNOLOGY: THEORIES, DETERMINANTS AND INTEGRATED FRAMEWORKS

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Abstract:

Information System (IS) technology can enhance operational efficiency, strategic decision making, and competitiveness among Small and Medium Enterprises (SME). However, studies on the theoretical landscape and key determinants of SMEs' intention to adopt remain fragmented and under-researched. The objectives of this study is to examine the core theoretical frameworks commonly used and to identify key determinants across different contexts and technology. This narrative review uses a qualitative and quantitative approach where it leverages Scopus and Google Scholar databases to retrieve relevant articles to be analyzed. Grounded on studies exploring information system technology, such as artificial intelligence (AI), blockchain technology, building information modelling (BIM), and digitalization, organization of theoretical models including the Technology Organization Environment (TOE) framework, Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), and other theories are presented. Interesting findings discovered that, in addition to common determinants, such as technology considerations, organizational context, environmental factors, and psychological aspects, play a significant role in the decision-making process to adopt a technology. Through the synthesis process, this narrative review stresses the multi-theoretical attempts, which allows for better understanding and guidance for SMEs on their intention to adopt information system technology

Keywords:

Adoption, Intention, Information Technology, SMEs, Systems

Introduction

SMEs are greatly known for its impact towards the global economies, employments, competitiveness and driving innovations. However, in the interior of the technological era, SMEs nowadays are facing enormous challenges and market pressure. Martínez-Peláez et al., 2024) contended that, in order to see improvements, SMEs must try to leverage information system technology for better operation streamlines, seamless decision-making process and for maintaining trajectory growth. By adopting IS technology, SMEs could gain new opportunities and remain competitive. However, according to Chaudhuri, Chatterjee, Vrontis, and Chaudhuri (2022)even though SMEs are willing to adopt IS technology, they often lag behind larger organizations due to their lack of capabilities, and resource constraints.

Several studies have highlighted the challenges faced by Small and Medium Enterprises (SMEs) in adopting innovative technologies. Yuwono, Novandari, Suroso, & Sudarto (2024) emphasized that financial constraints and limited resources are among the primary barriers to technology adoption. Similarly, Kalumendo (2022) identified key obstacles such as financial limitations, lack of internal and external expertise, and the high cost of technology implementation. These findings indicate that SMEs often struggle to allocate sufficient capital, expertise, and infrastructure to support digital transformation, thereby slowing down the integration of new technologies into their business operations

A variety of behavioral and organizational factors influence SMEs intention to adopt IS technology. A study conducted by Masood and Sonntag (2020) discovered that SMEs would have higher the intention to adopt IS technology if they could gain significant benefits when they adopt such as reduction of cost and efficiency improvements. Meanwhile, organizational factors like top management support and organizational readiness play a critical role in deciding whether to adopt or not (Salim, El Barachi, Mohamed, Halstead, & Babreak, 2022). Besides that, external pressures such as competitive pressure, government pressure and client demand, further influence the SMEs decision to adopt IS technologies.

Numerous theoretical frameworks for technology adoption studies has been used since several decades ago. Some of the well-known theories are Technology Acceptance Model (TAM), Technology, Organization and Environment (TOE) framework and Unified Theory of Acceptance and Use of Technology (UTAUT) to name a few. Scholars and practitioners have used these theories to identify key determinants of adoption from the technology, organization, environment and individual context (Baker, 2012; Jeyaraj, Dwivedi, & Venkatesh, 2023; Tornatzky & Fleischer, 1990). However, as years go by, the technological ecosystem has evolved and the process of decision-making is now more multidimensional, context-dependent and moulded by complex relationships between internal and external factors.

This narrative review aims to fill this gap by critically assessing and synthesizing recent empirical findings on SMEs' intention to adopt IS technologies. Specifically, this review:
(1) to examine the core theoretical frameworks informing current research and how they have been integrated or extended and
(2) to identify and compare the key determinants that recur across different technologies and contexts.

This review offers a roadmap that bridges theoretical diversity and practical relevance, guiding future scholarly efforts and strategic decisions in a rapidly evolving technological landscape. The structure of this paper is organized as follows: The section begins by delineating the methodological approach and the criteria employed for selecting and reviewing pertinent studies. This is followed by a presentation and analysis of the findings gleaned from the literature. The subsequent discussion explores various theories applied within the studies and examines the integration of these theoretical frameworks to provide a comprehensive understanding of the subject matter.

Methodology

This narrative review employed a structured yet flexible approach to identify, evaluate, and synthesize relevant studies examining SMEs' intentions to adopt information system (IS) technologies. First, established inclusion criteria focusing on peer-reviewed journal articles and conference papers published between 2019 and 2024. Although earlier studies provide foundational insights, the chosen timeframe captures the latest theoretical refinements, emergent technologies, and evolving SME practices. To ensure a broad coverage of research, the databases Scopus and Google Scholar were searched using a combination of keywords such as "SMEs," "adoption intention," "information systems," "TAM," "TOE," "UTAUT," "blockchain," "cloud computing," "AI," and "BIM".

After an initial screening of titles and abstracts, full-text articles were retrieved and assessed for relevance. Studies that explicitly addressed SME contexts, examined determinants or theoretical frameworks, and reported empirical findings (quantitative, qualitative, or mixed methods) were retained. Articles focusing solely on large enterprises or purely conceptual papers without any empirical component were excluded. The final pool of articles was then organized using a literature matrix, capturing details such as authors, publication year, context, theoretical frameworks, methods, and key findings. This structured matrix served as the foundation for the subsequent thematic analysis and synthesis, enabling a more critical comparison of theoretical underpinnings, determinants, contexts, and methodological approaches across the selected body of work.

Findings and Discussions

Theories and Models used from Previous Studies

The studies collectively integrate various theoretical frameworks such as the TAM, TOE framework UTAUT, and Resource Dependence Theory (RDT) to investigate SMEs' intention to adopt information system technologies. From Table 1, the theories and models that previous studies used reveal the diversity of technological context and the integration of theoretical frameworks. Most of the studies use established models like TAM, TOE and UTAUT as their underpinning theory.

Integration of TAM-TOE framework in a blockchain adoption in SMEs study (Shaikh et al., 2024) which focuses on relative advantage, compatibility, vendor support and management support. This approach of integration allows better understanding of the phenomena. Similarly, the expansion of TAM and TOE were further integrated with RDT, adding the perceived importance of technology adoption process within the smart factory context (Kwak, Yoon, & Martí-Parreño, 2023). Studies of Building Information Modelling (BIM) and ERP system in

smart manufacturing (Murguia, Vasquez, Demian, & Soetanto, 2023) adapted TAM and this demonstrates the relevance of using TAM in studying IS technology adoption.

Further expanding the theoretical realm, TOE framework was used to explore the adoption of cloud computing, emphasizing the social factors along technological, organizational and environmental considerations (Alqahtani et al., 2023). Studies byAdu et al. (2022) and Saad et al. (2022) stresses the role of top management support, security and anxiety which were driven from the psychological factor. The psychological factor play an important role in cloud accounting and digitalization adoption. Another concept called Fear of Missing Out (FOMO) was introduced by Gartner, Fink, and Maresch (2022)which was extended from TAM. This illustrates that more extended models are now including emotional and experiential factors.

Table 1: Theories and Models used from Previous Studies

| Authors	Technology Context	Theoretical Framework(s) Utilized
(Kwak et al., 2023)	Smart Factories	TAM, TOE, RDT
(Alqahtani, Beloff, & White, 2023)	Cloud Computing	TOE
(Murguia, Demian, & Soetanto, 2023)	BIM	Modified TAM
(Saad et al., 2022)	Cloud Accounting	TOE
(Adu et al., 2022)	Digitalization	UTAUT
(Gartner et al., 2022)	New Manufacturing Technologies	TAM (extended with FOMO)
(Harun & Tajudeen, 2021)	Instagram Marketing	TOE
(Lorente-Martínez, Navío-Marco, & Rodrigo-Moya, 2020)	In-Store Tech (Retail SMEs)	TOE, TAM
(Qin, Shi, Lyu, & Mo, 2020)	BIM	TAM-TOE
(Fauzi, 2019)	Online Delivery Service (SMEs)	TAM + Institutional Theory

Source: Author's Own Compilation
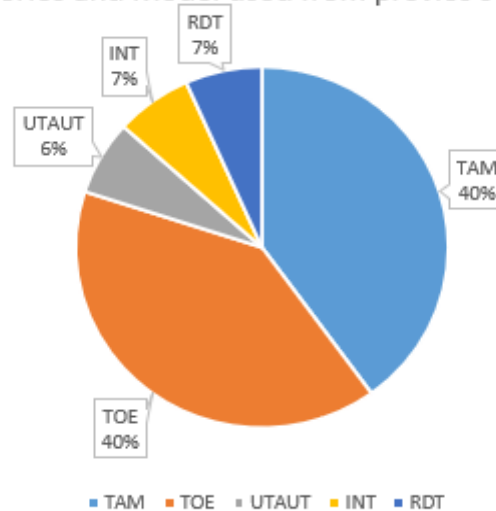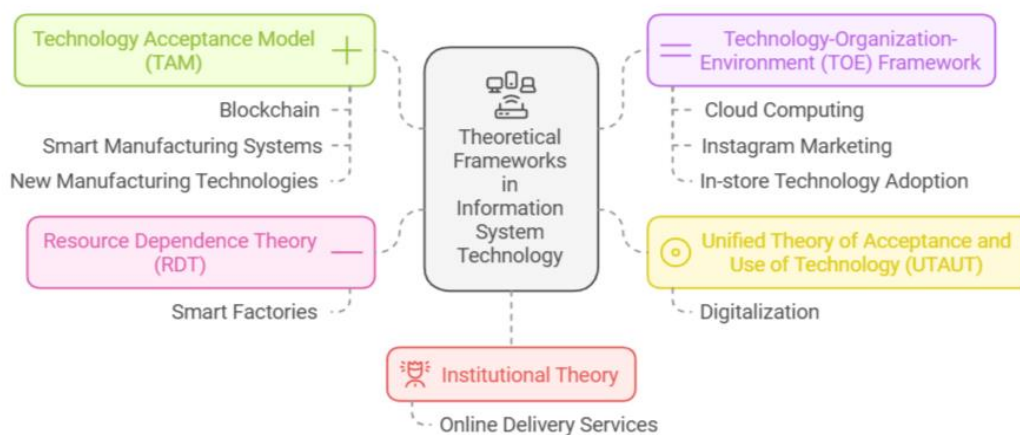
Figure 1: Theories and Models

Figure 2: Technology Adoption Models

Source: Author's Own Creation

Key Determinants Across Different Technologies

In blockchain studies by Malik, Chadhar and Chetty (2021) and Salim et al. (2022) emphasized that the technology should be compatible with the current system, offer clear benefits and supported by management and vendors. The stated factors help to pivot specific challenges related to technology adoption and disruptive technology.

Conversely, other technologies such as smart factories, cloud computing and cloud accounting show varied yet coincide within determinants. A study by Kwak et al. (2023) pointed out that perceived importance and perceived usefulness which were drawn from Resource Dependence Theory, are used strategically in adopting smart factory technologies. Due to this outcome, decision-making in smart manufacturing is highly influenced by the perceived strategic gain. Similarly, in cloud technology studies Alqahtani et al. (2023) and Saad et al. (2022)contented to security, relative advantage, top management support, service quality and organizational readiness as key drivers for the intention to adopt technology.

This comparative analysis of what influences the adoption of various technologies helps us better understand why SMEs choose to adopt specific technologies. It also a acts as a guidance in customizing technology implementation strategies to meet the unique needs and circumstances of different SME sectors.

Table 2: Determinants of Adoption Intention by Technology Type

Technology Type	Common Determinants Found	Example Studies
Blockchain (SMEs)	Compatibility, Relative Benefit, Tech Readiness, Management Support, Vendor Support	(Salim et al., 2022)
Smart Factories	Perceived Usefulness, Perceived Importance (RDT), Technological & Org. Factors	(Kwak et al., 2023)
Cloud Computing/Cloud Accounting	Relative Advantage, Security, Top Management Support, Organizational Readiness, Service Quality	(Alqahtani et al., 2023; Saad et al., 2022)
BIM (Construction)	Project-level Usefulness, Ease of Implementation, Policy Requirements, Standardization	(Murguia, Demian, et al., 2023; Qin et al., 2020)
Digitalization (SMEs)	Performance Expectancy, Attitude, Anxiety (FOMO), Experience	(Adu et al., 2022; Gartner et al., 2022)
Social Media Marketing (Instagram)	Technological, Organizational, Environmental readiness	(Harun & Tajudeen, 2021)
Online Delivery Service (SMEs)	Perceived Usefulness, Ease of Use, Institutional Pressures (Normative, Coercive, Mimetic)	(Fauzi, 2019)

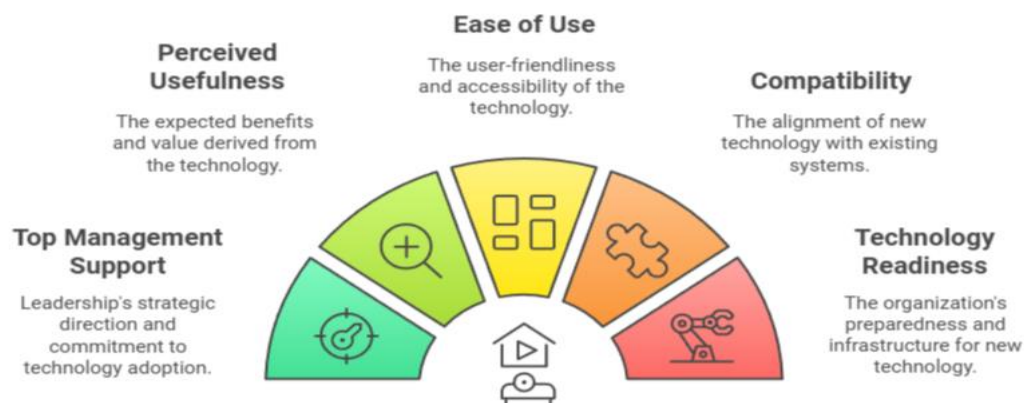Source: Author's own compilation

Figure 2: Top 5 Key Determinants of Adoption Intention in IS Studies
Source: Author's Own Creation

Future Suggestions

Building on what is known from this review, there are several promising paths for future research. Firstly, studies tailored to specific contexts—considering local cultural norms, regulatory environments, and industry specifics—would provide deeper insights. These investigations could explore how different contextual factors, like government policies or market competition, affect traditional drivers of technology adoption. While many current studies use surveys and quantitative analysis, adding qualitative research, case studies, and long-term studies could reveal more about the evolving nature of technology adoption. Longitudinal studies, for example, could track changes in SMEs' attitudes towards new technologies over time as conditions and technologies themselves evolve. Detailed case studies and interviews might highlight complex dynamics, like the interplay between psychological factors, such as the fear of missing out, and practical constraints.

Furthermore, it's crucial to look more closely at external support systems and the broader ecosystem. Studies could investigate how support from government programs and the reliability of vendor services influence technology adoption within SMEs. This could inform how well external assistance meets the needs of SMEs or where it falls short.

Lastly, integrating less conventional theoretical frameworks, such as behavioral economics or network-based theories, could offer new perspectives on why SMEs might quickly adopt certain technologies while being hesitant about others. Exploring how digital ecosystems and relationships with suppliers and partners affect SMEs' technology strategies could provide a more comprehensive view of the adoption landscape. By adopting a broader range of methodologies and theoretical approaches, future research can give us a more transparent, more dynamic picture of how SMEs interact with new technologies, leading to more effective policies and strategies for digital advancement.

Conclusion

This review has synthesized the extensive body of literature concerning SMEs' intentions to adopt information systems, highlighting the crucial aspects of technology, organizational factors, environmental conditions, and emerging psychological and cultural influences. Whilst conventional models like TAM, TOE, and UTAUT continue to present foundational insights, the developing technological landscape and the varied SME contexts require more nuanced and dynamic approaches.

In conclusion, this narrative review has successfully achieved its objectives and not only sheds light on the multifaceted nature of IS adoption among SMEs but also sets the stage for future investigations that could support policymakers, technology providers, and SME owners in nurturing an environment that enhances the effective and sustainable adoption of information systems. As the digital landscape continues to advance, so does the understanding and methodologies in researching SMEs' adoption behaviors, safeguarding that the insights gained are relevant, actionable, and conducive to the growth and sustainability of SMEs in the digital age.

Acknowledgement

enriching academic environment, which has significantly contributed to our professional and personal growth.

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