

UNDERSTANDING MOBILE PAYMENT IN MALAYSIAN ENTREPRENEURIAL ECOSYSTEMS: A SCIENTOMETRIC ANALYSIS OF ADOPTION PATTERNS

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Abstract: *The global adoption of mobile payment systems has seen significant growth, but the uptake among entrepreneurs varies significantly across different regions. This study examines mobile payment adoption among Malaysian entrepreneurs, analyzing trends and patterns from 112 Scopus-indexed papers. Key factors influencing adoption are categorized by year, affiliations, authors, and subject areas. The findings indicate that research in this field is on the rise in Malaysia, with incremental yearly increases: 19 publications in 2021, 20 in 2022, and 35 in 2023. Moreover, clusters like continuance adoption and mobile payment systems remain prominent. This research provides insights into the adoption of digital payments in emerging nations, offering valuable data for entrepreneurs, technology providers, and business owners aiming to leverage mobile payment technologies for business growth. It highlights the growing relevance of mobile payments for entrepreneurial success, contributing to the broader understanding of digital transformation in Malaysia's entrepreneurial landscape.*

Keywords: *Mobile payments, Adoption, Entrepreneurs, Malaysia*

Introduction

The global transformation of financial transactions, facilitated by the evolution of mobile payment technology, has led to an increasing prevalence of blockchain-based strategies (Bulsara & Pandya, 2019). Wang et al. (2021) define mobile payments as any transactions carried out through mobile devices. This method of payment enables retailers to conduct money transactions through mobile devices and allows consumers to securely purchase products or services (Rahmad, 2024). Mobile payment has gained prominence among entrepreneurs across various regions, especially micro-entrepreneurs and small and medium-sized enterprises (SMEs), as evidenced by recent studies in South Africa (Slinger, 2024), the Philippines (Pueblos, 2023), and Ghana (Acheampong, 2023).

According to Afif et al. (2023), entrepreneurs are very interested in adopting FinTech payments, despite their perception of a higher risk involved. This shows that risk perception and trust play a big role in influencing the decision of micro, small, and medium-sized businesses (MSMEs) to accept mobile payments. Qiu et al. (2022) show that mobile payments can raise family income in rural China. This means that mobile payment systems can be a lifeline for people who are struggling financially. This fits with the idea that mobile money services make it easier for small businesses to get trade credit, which leads to more people having access to money (Ngigi, 2022). Nevertheless, out of all the entrepreneur publications in Malaysia, there is still a lack of sufficient references that provide the most comprehensive analysis of mobile payments, specifically using Scientometric approaches. Thus, the objective of this study is to review insight and future trends in mobile payment adoption among entrepreneur research in Malaysia

Literature Review

Mobile Payments Adoption

Mobile technology, which can range from cell phones to other wirelessly equipped devices, is used in the process to transmit monetary value from one party to another where the users can make their purchases, pay bills, send money, and perform other financial operations (Atmajaya et al., 2019; Elgazouly et al., 2022). With these benefits including improved performance, efficiency, and time savings, mobile technology signifies a move towards a cashless economy (Aprisca, 2024). Essentially, mobile payments are becoming more and more popular, as affected by several factors such as security, trust, usability, institutional considerations, and government legislation which significantly influence their adoption (Cao, 2021). Hasan et al. (2021) also found several critical elements that influence the acceptance of mobile payments including perceived ease of use, utility, safety, and trust. From the user's perspective, mobile payments refer to transactions initiated and completed through mobile phones, providing a convenient and efficient method for conducting financial transactions (Humbani & Wiese, 2019).

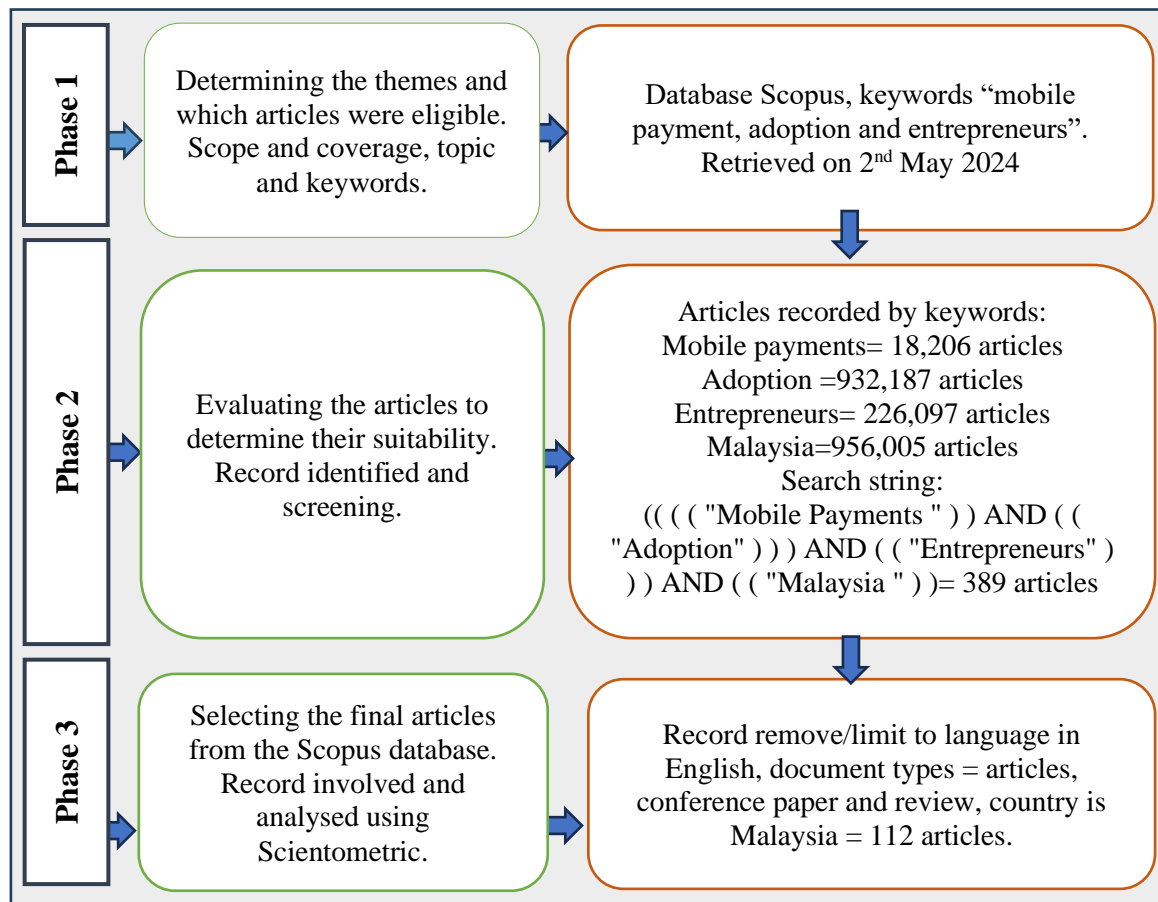
Mobile Payments Adoption and Entrepreneurs

The increasing prevalence of mobile devices, particularly smartphones, has led to the widespread acceptance and utilisation of mobile payments among consumers and merchants (Saprikis & Vlachopoulou, 2021). In 2023, it was projected that the global mobile payment user base would exceed 1.31 billion, representing a growth of over 60% compared to 2019 (Nguyen et al., 2023). As the need for mobile payment grows and can be satisfactorily met, customers' inclination to adopt the payment system will also increase (Lin et al., 2019).

Consumer needs and merchant participation incentives are crucial determinants in the mobile payment service business. To effectively serve their customers, providers must consider both the expectations of consumers and the motives of merchants (Xinyan et al., 2009). The acceptance of mobile payment among entrepreneurs, from a merchant's perspective, has been discussed by recent scholars. Entrepreneurs, especially those operating in small and medium-sized enterprises (SMEs), are attracted to mobile payments because of its convenience and compatibility with everyday routines. The user-friendly nature and reliable performance of mobile payment solutions are deemed beneficial by entrepreneurs (Chandradasa & Liyanapathirana, 2022). Moreover, the implementation of FinTech solutions, such as mobile payments, can offer enterprises a distinct advantage in the market. In addition, perceived ease of use, usefulness, safety, and trust are critical factors that influence the adoption of mobile payments among entrepreneurs (Hasan et al., 2021). Experts suggest that examining the adoption of mobile payments among micro-entrepreneurs in Malaysia could provide valuable insights into the factors that influence their use of mobile applications. This understanding can be beneficial in grasping their acceptance of mobile payment solutions (Ojo, 2023; Slinger, 2024)

Methodology Flowchart

Figure 1 illustrates this study's methodological flowchart, which is based on data from the Scopus database. It outlines the three essential steps taken to investigate the landscape of publications related to mobile payment adoption among entrepreneurs in Malaysia. The research specifically focuses on identifying Malaysian publications that discuss the adoption of mobile payments and their relationship with entrepreneurs. The process involves the following steps: 1) Identification of Topics – identifying relevant topics and determining which papers qualify for consideration based on the scope of their content. 2) Evaluation of Articles – assessing the articles to gauge their suitability for inclusion in the study. 3) Final Selection – selecting the final articles from the Scopus database. Only review articles, conference papers, and research articles are included in this study. Figure 1 visually represents the methodological framework developed concerning the use of mobile payment among business owners in Malaysia. It concisely illustrates the process of conducting the literature search. Descriptive content analysis, a methodical compilation technique, can identify overarching trends and findings from research in any field or subject (Akyürek, 2022). Through a systematic examination of research findings, this approach seeks to characterise broad trends and focused studies within a discipline (Şahin, 2021). Researchers can organise and analyse data gathered from databases, such as the Web of Science Core Collection, through descriptive analysis using programmes like Microsoft Excel (Sever, 2021). On May 2, 2024, the process of obtaining data from the database began. This includes only using the English language. The researchers use CiteSpace software for scientific analysis and Microsoft Excel 365 for analyzing the descriptive dataset from the Scopus database. The focus shifts from 389 articles using the search string ("Mobile Payments") AND ("Adoption") AND ("Entrepreneurs") AND ("Malaysia") to 112 final articles, all of which are centred on Malaysia. Next, CiteSpace makes use of several technical concepts to generate scientometric analysis, some of which include the evolution of research clusters and the most cited articles. When it comes to understanding the relationships that exist between different clusters, the concept of burst is fundamentally relevant to the shift in recent publication trends.



Results

Descriptive Analysis

Figure 2 illustrates the progressive increase in publication trends from 2014 to 2023. In 2024, an increased vulnerability is anticipated as the situation has not yet concluded. This study is on the rise in Malaysia, with yearly increases: 19 publications in 2021, 20 in 2022, and 35 in 2023. These studies jointly enhance our comprehension of the patterns and variables that impact entrepreneurs' acceptance of mobile payment solutions. Figure 3 displays a list of 15 authors. Ooi and Tan, the two leading writers in the database, exhibit exceptional research output and substantial influence in their respective disciplines of mobile payment. They studied the factors that influence people to adopt mobile payments. According to Ooi and Tan, the perceived simplicity and value of a mobile payment system are two significant factors affecting its adoption. Their findings are consistent with the Technology Acceptance Model (TAM), which asserts that people are more likely to use a technology if they think it is valuable and straightforward (De Sena Abrahão et al., 2016). Also highlighted is the importance of trust in mobile payment systems, an indication that users' faith in the safety and dependability of these services dramatically affects their decision to use them (Qasim & Abu-Shanab, 2015). These authors also agree with Al Mamun's finding that trust is an important factor, especially in emerging markets where users may be more concerned about privacy and security (Abdullah & Khan, 2021).

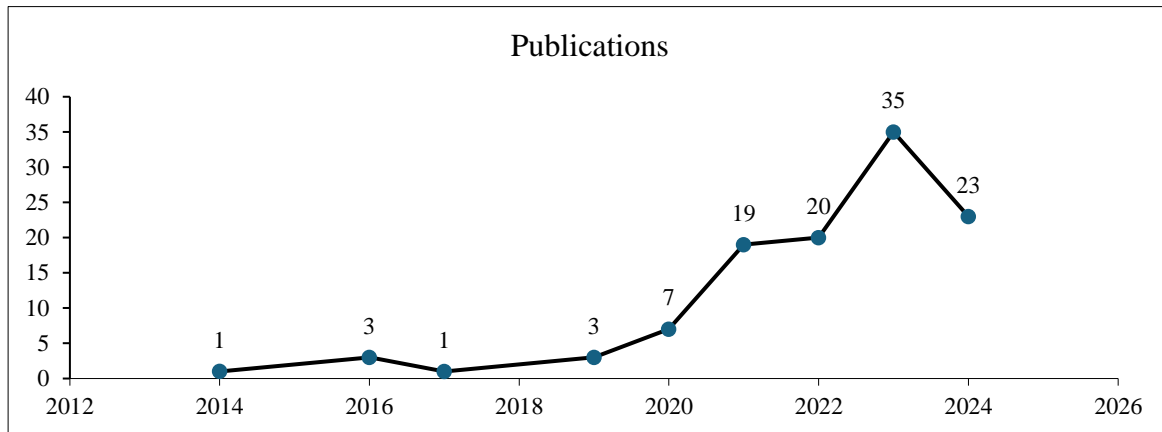


Figure 2: Publications by Year 2014 -2023

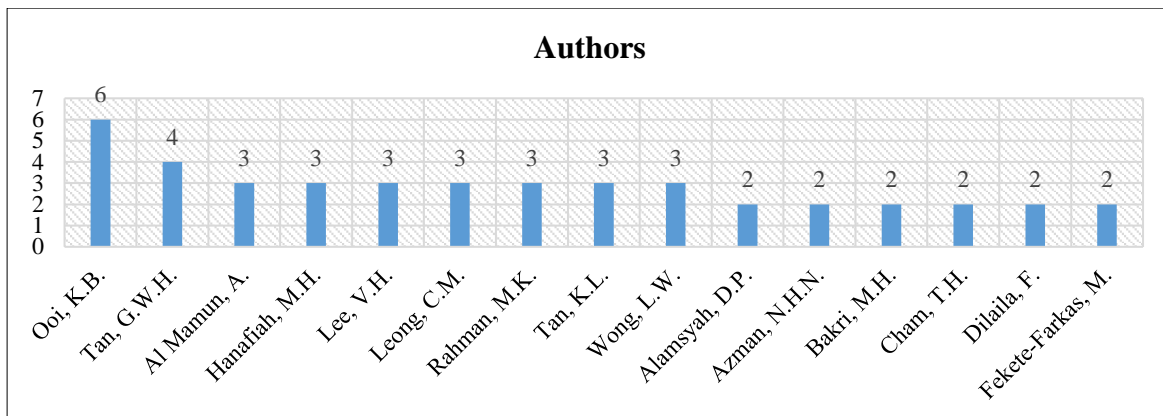


Figure 3: Publications by Author

Figure 4 shows the results of 4 highest publications from journals in the Scopus database. The *Journal of Islamic Marketing*, *Journal of Open Innovation: Technology, Market, and Complexity*, *Journal of Science and Technology Policy Management*, and *Journal of Financial Services Marketing* are the top three journals with the highest research productivity and impact. These journals have published 3 to 4 publications, respectively. Every publication has robust research outcomes, substantial citation numbers, and distinct research emphases on mobile payments.

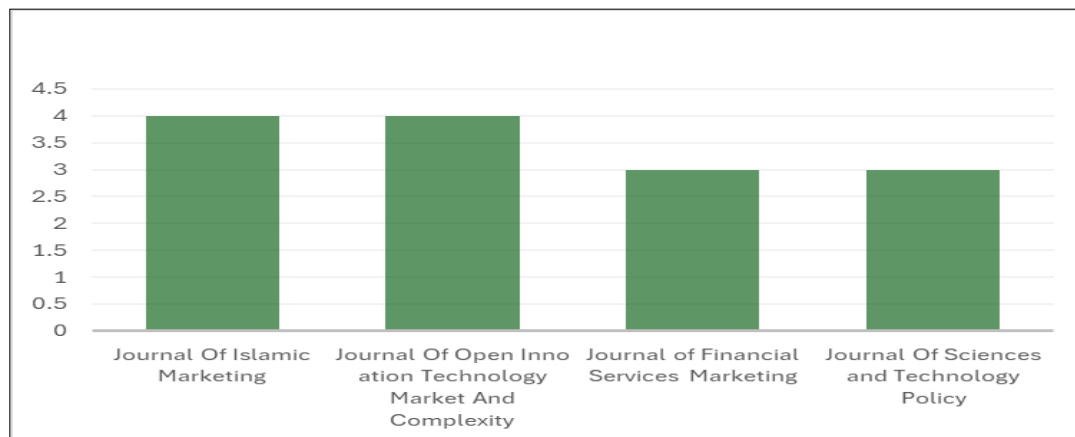


Figure 4: Publications by Source

Figure 5 displays a detailed analysis and thorough summary of publication records categorised by areas of study. This analysis provides significant information on the research impact and collaboration patterns in several scientific disciplines within the Scopus database. The focus of the research is mobile payments. The field of business, management, and accounting has the most significant number of publications, with a total of 50. Computer science and social sciences follow with 33 publications each; economics, econometrics, and finance recorded 21 articles. As traditional banking systems financially exclude entrepreneurs in developing countries, mobile money services are emerging as a viable alternative. This is reflected by the trends in publications on mobile payment adoption among entrepreneurs. To illustrate their operations, it is essential to consider the evolving landscape of research in this area (Talom & Tengeh, 2019).

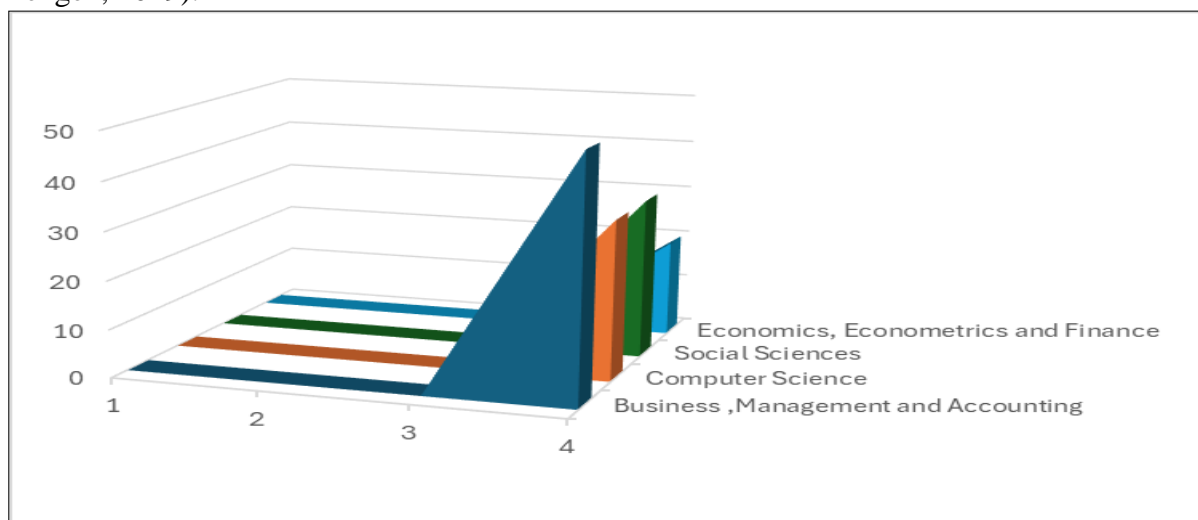


Figure 5: Publications by Area of Study

Scientometric Analysis

Researchers have shown interest in conducting Scientometric analysis in the realm of mobile payments. The studies have provided both retrospective and prospective insights into mobile payments research, revealing the fundamental intellectual framework of this field (Verma et al., 2020; Ramtiyal et al., 2020). Scientometric studies offer valuable insights into the development of research subjects, collaborative networks, and developing trends in particular fields (Zaki et al., 2023; Cataldo et al., 2023). These studies aid in identifying significant countries, institutions, authors, and journals, as well as monitoring the evolution of research themes over time (Huang et al., 2020). This current study focuses primarily on the evolution of research clusters in Malaysia. It examines mobile payment adoption research in Malaysia, identifying distinct clusters based on citation patterns and thematic links. The researchers use citation counts, silhouette, and network-based metrics such as node names and betweenness to evaluate specific publications. This integrated technique enables us to comprehend the highly referenced publications and their interactions within the research network. The relatively high average Silhouette score of 0.58 suggests that the clustering process has effectively captured meaningful divisions within the research landscape. This score not only reflects the quality of the clustering, but also offers valuable insights for researchers, policymakers, and funding agencies (Kaufman & Rousseeuw, 1990). Table 1 illustrates all cluster IDs with a high silhouette score, indicating strong divisions within this research landscape. Cluster 7 has the highest score of 1, while cluster 5 has the lowest score of 0.931.

Table 1: Results of Research ClusterID, Silhouette, Average Year, Nodes and label and Cited counts.

ClusterID	Silhouette	Average Year	Node names	Citation Counts
1	0.999	2013	Least square approximations	4
2	0.956	2019	Mobile payment	5
			Partial least squares	3
3	0.958	2020	Adoption intention	4
			Lew S	4
			Islamic fintech	4
4	0.949	2020	Technology adoption	5
			Hair JF	4
5	0.931	2020	Survey	6
7	1	2013	Perceive ease of use	3

Figure 6 illustrates the discovery of six research clusters derived from an analysis of data pertaining to mobile payment uptake. These clusters include case studies, mobile payment systems, PLS-SEM, e-wallet adoption, continuous intention, and usage. In addition, Scientometric methodologies can identify significant turning moments in intellectual progress, examine the development of research fields, and identify the most dynamic areas of research using measures such as centrality and burst (Geracitano et al., 2021). Figure 6 shows that high bursts in survey responses can provide valuable insights into public sentiment, emerging trends, and the effectiveness of communication strategies (Zickuhr & Smith, 2012). In this study, surveys represent the highest burst in cluster number 5, indicating their importance as a fundamental tool for gathering data on public opinion, consumer behaviour, and social trends. High bursts in survey responses, characterised by sudden increases in engagement or response rates, can indicate significant changes in the population's attitude or behaviour. The research clusters align with trendsetting from 2020 to 2024. In research cluster 2, the burst analysis transitions from analysing consumer behaviour to focusing on complexity and small-medium enterprises. Research cluster 3 examines cloud computing and augmented reality, social commerce and application programmes, and adoption theories.

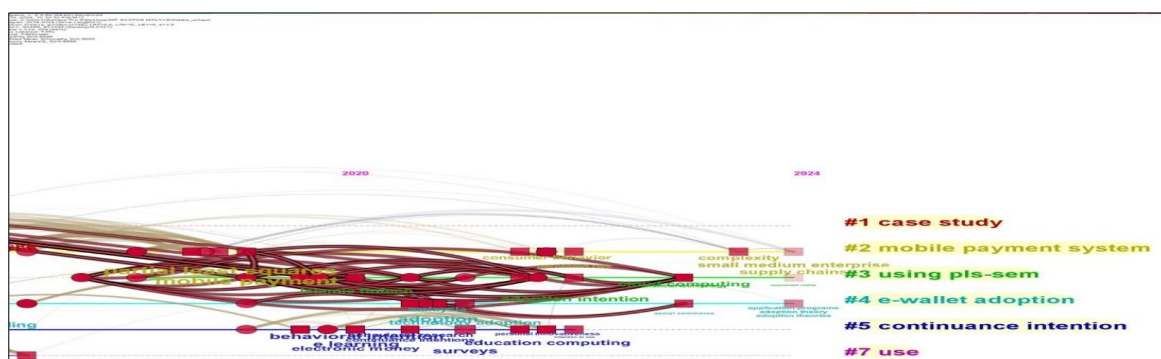


Figure 6: Results of Citation Burst and Research Cluster

Discussion

A Scientometric analysis was undertaken using Bibliometric and CiteSpace software to examine articles on the adoption of mobile payments among entrepreneurs from 2014 to 2023. This analysis examines a precise search query to locate 112 documents from the Scopus database with the explicit aim of identifying Malaysian publications that concentrate on the use

of mobile payments and its correlation with entrepreneurs. This connects the study to Malaysia's overarching national objectives, such as its agenda to lead the region in the digital economy. The determination of how business owners use mobile payments is consistent with Malaysia's goal of digital transformation, such as the Sustainable Development Goals (SDG) agenda. Furthermore, Malaysia's local setting may be different from that of other regions in terms of technology infrastructure, cultural adoption patterns, and legal frameworks. As a result, the Malaysian media's distinct viewpoint is essential for comprehending the subtleties of mobile payment uptake among the nation's small business owners. In 2023, Malaysia generated a total of 35 publications on mobile payments, representing a 75% rise from the previous year. These studies collectively improve our understanding of the patterns and factors that influence the adoption of mobile payment solutions by entrepreneurs. The surge in research in this domain is captivating the attention of numerous researchers due to their desire to gain further insights into the benefits derived from the adoption of mobile payments among entrepreneurs in Malaysia. These advantages include enhanced performance, efficiency, and time savings, which signify a transition towards a cashless economy (Aprisca, 2024).

This study also examined publications by authors who studied the uptake of mobile payments among entrepreneurs in Malaysia. The investigation revealed that a total of 4 authors have conducted and published their research in the Scopus index from 2014 to 2023. While the number of these publications is still relatively small compared to those produced by authors in Western countries, the upward trend indicates that the research field on mobile payment adoption among entrepreneurs is becoming increasingly popular among authors in Malaysia. Subsequently, this study investigated the origin of publications. Figure 4 displays the findings, revealing a total of 4 publications obtained from source journals in the Scopus database. The *Journal of Islamic Marketing* and the *Journal of Open Innovation: Technology, Market, and Complexity* are the preferred journals for authors to publish their manuscripts on mobile payment adoption among entrepreneurs in Malaysia, with a total of 6 publications. It is anticipated that in the future, an increased number of journals at the Scopus level will offer chances to publish high-quality research findings in this research area. This facilitates broader access for scholars interested in studying this topic by directing them to higher-caliber journals, resulting in the publication of high-quality and impact journals. Figure 5 provides a comprehensive review of publication records, organised by areas of research, including a complete summary of publications in each category. This analysis offers substantial insights into the research influence and collaborative tendencies across several scientific fields within the Scopus database. The study's findings revealed that the business and management disciplines have the highest number of publications with a total of 50. This is followed by computer science and social science, each with 33 publications. Remarkably, research in the realm of mobile payments has also permeated disciplines beyond the social sciences, including physics, astronomy, biochemistry, genetics, and energy. This demonstrates the growing prevalence of interdisciplinary collaboration in research, which extends beyond any specific discipline (Cummings & Kiesler, 2005). This can indirectly foster the generation of more comprehensive ideas and research findings, leading to the creation of a broader and more current body of knowledge (Bellotti et al., 2016). Table 1 and Figure 6 depict the categorisation of six research clusters derived from an analysis of data obtained from the case study on the mobile payment system. Figure 8 illustrates the correlation between the research clusters, nodes, and trendsetting from 2020 to 2024. Research cluster 2 shifts its attention from researching consumer behaviour to examining complexity and small-medium enterprises in the burst analysis. Research cluster 3 focuses on the study of cloud computing and augmented

reality, as well as the exploration of social commerce and application programs. Additionally, it investigates adoption theories.

The findings of this research demonstrate that the study review into the use of mobile payment is expanding in Malaysia, particularly among entrepreneurs who acknowledge the benefits of utilising mobile payments, such as its simplicity and compatibility with daily routines. Entrepreneurs are drawn to mobile payment solutions due to their user-friendly interface and consistent performance (Chandradasa & Liyanapathirana, 2022). Despite the popularity of mobile payment technology, more research is needed to understand its trends and drivers (Utami, 2024). With mobile payments, skill is considered as a capability credibility, prompting sellers to think that mobile payment can achieve the intended aim and function as predicted (Yeboah et al., 2020). Thus, mobile payment adoption represents a big potential for Malaysian micro-entrepreneurs. Academic research has exposed both the benefits and challenges to adoption, giving essential frameworks for understanding the elements that drive or hinder this digital revolution. Policymakers, FinTech entrepreneurs, and academics must work together to promote mobile payments as the Malaysian economy digitises.

Conclusion And Future Research

This study utilised the Scopus database to precisely identify Malaysian publications that concentrate on the adoption of mobile payments and its correlation with entrepreneurs. The process comprised the following stages: Phase I involved identifying the themes and assessing the eligibility of articles based on their breadth. Phase II entailed assessing the articles to ascertain their appropriateness. Phase III entailed the selection of the ultimate articles from the Scopus database. A Scientometric analysis was undertaken using Bibliometrix analysis and CiteSpace software to examine the articles on the adoption of mobile payments among entrepreneurs from 2014 to 2023. This research performed a precise search query to retrieve 112 documents from the Scopus database. Currently, there is a lack of a complete global statistical analysis of bibliometric reviews (Utami et al., 2024), particularly one that focuses on Scientometric-based research on the utilisation of mobile payments and the examination of entrepreneurs.

The study's findings indicate a rise in publication patterns from 2014 to 2023 regarding the adoption of mobile payments among entrepreneurs in Malaysia and reveal that 4 authors had conducted and published their research in the Scopus index, specifically 10 articles relevant to the use of mobile payments. The *Journal of Islamic Marketing* and the *Journal of Open Innovation: Technology, Market, and Complexity* are the preferred journals for authors to publish their research on mobile payment adoption among entrepreneurs in Malaysia. Each journal has published at least 3 articles on this topic. The result of the study also reveals that the business and management disciplines have the highest number of publications with a total of 50. The Scientometric analysis discovered six distinct research clusters upon analysing data from a case study on the mobile payment system. These clusters are based on factors such as the usage of PLS (Partial Least Squares), adoption of e-wallets, continuous intention, and usage patterns.

While this study adds to the existing body of knowledge, it also has several limitations. The review exclusively examines academic documents obtained from the Scopus database, hence limiting the scope of the studied literature concerning the adoption of mobile payment among entrepreneurs in Malaysia. Conducting future research with a wider variety of literature from

additional databases like Web of Science, Google Scholar, and PubMed would be stimulating. Additionally, there are certain limitations in the software utilised for analysing the outcomes. For example, the articles with the highest number of citations may span across many fields, resulting in a lack of specialisation for our research area. Furthermore, the co-citation analysis only considers the first author, excluding all subsequent writers. Some publications may have been published a long time ago, which means that their conclusions can be outdated and not representative of the most recent research findings. This study focuses exclusively on articles published from 2014 to 2023.

Moreover, the study aims to identify the persistent research terms of citation-based metrics such as citation counts and citation bursts which are network-based metrics that the literature has repeatedly highlighted throughout time. Previously, bibliometric evaluation methods, such as those employed by Sharma (2023), delineate the intellectual framework of mobile payment research, highlighting principal themes, trends, and deficiencies. Hence, future research can include articles published after January 2024 to enhance understanding and interpretation of the most recent research, which may provide divergent findings. However, it is anticipated that future research will derive valuable insights and research concepts from this study. Entrepreneurs' adoption of mobile payment is driven by multiple factors such as demographic and socioeconomic characteristics, subjective well-being, political affiliation, and health state (Vatsa, 2023). In terms of practical implication, this research is anticipated to enhance comprehension of the adoption of digital payments in developing countries and provide empirical evidence for entrepreneurs, technology providers, and business owners seeking to utilise mobile payment technologies to grow their enterprises.

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