

Technology Acceptance Model (TAM) on Banking: A Review

Mimma Maripatul Uula¹ & Sherrindra Avedta²

¹ Tazkia Islamic University College, Indonesia

² Istanbul Sabahattin Zaim University, Turkiye

This study aims to see the development of Technology Acceptance Model (TAM) on Banking research around the world and research plans that can be carried out based on journals published on the theme. This research uses a qualitative method with a bibliometric analysis approach. The data used is secondary data with the theme "TAM on Banking" which comes from the Scopus database with a total of 583 journal articles. Then, the data is processed and analyzed using the VosViewer application with the aim of knowing the bibliometric map of "TAM on Banking" research development in the world. The results of the study found that on bibliometric author mapping the authors who published the most research on the theme "TAM on Banking" were Chawla D.; Joshi H; Belousova V.; Chichkanov N; Baptista G.; Oliveira T.; Maduku D. K; Changchit C.; Lonkani R.; Samp; and Saxena N.; Gera N.; Taneja M.. Furthermore, based on bibliometric keyword mapping, there are 5 clusters that can become research paths with topics related to (1)Technology Adoption in Banking and its Influential Factors, (2)Acceptance of Technology in Banking, (3)Technological Innovation in the Banking Sector, (4)Mobile Banking Service Adoption, and (5)Risks in Online Banking Services.

Keywords: TAM; Banking; Research Map; Bibliometric; Technology

OPEN ACCESS

*Correspondence:

Mimma Maripatul Uula
mimma.uula2010@gmail.com

Received: 21 May 2023

Accepted: 30 May 2023

Published: 7 June 2023

Citation:

(2023) Technology Acceptance
Model (TAM) on Banking: A Review
Islamic Marketing Review
2.1.

INTRODUCTION

The Technology Acceptance Model (TAM) is a theory that describes how individuals accept and adopt information systems or technology (Marikyan & Papagiannidis, 2023). In another definition, the Technology Acceptance Model (TAM) is a theoretical framework used to study the factors that influence the acceptance and adoption of new technologies (Xu et al., 2008; Huang & Lee, 2012; Sánchez-Prieto et al., 2019; Martín-García et al., 2019). This model is based on the idea that an individual's intention to use a technology is influenced by two main factors, perceived usefulness (PU) and perceived ease of use (PEOU). Perceived usefulness refers to the extent to which individuals believe that the technology will improve performance or productivity. Meanwhile, perceived ease of use refers to the extent to which individuals believe that the technology is easy to use and requires minimal effort. The TAM model also includes other constructs that can influence an individual's intention to use technology, such as attitude toward use (ATT), subjective norm (SN), and behavioral intention to use (BI) (Huang & Lee, 2012; Sánchez-Prieto et al., 2019).

The use of the TAM model has been done before, one of which is in looking at technology acceptance in the banking industry. There are several examples of research that has used TAM in the banking sector, including TAM studying the acceptance of mobile banking applications by bank customers, examining the effect of risk, benefit, and ease of use on customer trust in using internet banking, examining the factors that influence the acceptance of Branch Delivery System technology among bank employees, studying the effect of consumer attitudes on the intention to use internet banking, and so on (Chuttur, 2009; Putri & Fithrie, 2019; Cahyaning, 2020). This indirectly explains the benefits of the TAM model from the many studies that use the TAM model in the acceptance of a company's technology.

However, the TAM model has also been criticized for its focus on simple technology acceptance and the need to consider the social and emotional elements of technology use (Baron et al., 2006). Other criticisms of the TAM model include, the TAM model is more appropriate for individual use and acceptance of technology than in corporate or institutional applications that require the integration of information technology, inadequate theoretical assumptions, the TAM model tends to ignore all aspects of group, social, and cultural decision making involved in the adoption and application of new technologies, and is unable to

capture the complexity of user interactions with technology in technology-mediated environments (Huda et al., 2021; Lim, 2018; Ajibade, 2018; Chuttur, 2009).

Despite these criticisms, researchers have offered dialectical antidotes in the form of conceptual, methodological, and replication treatments to support the continued use of TAM to understand the peculiarities of user interactions with technology in technology-mediated environments (Lim, 2018). This has certainly led to various modifications of TAM and the TAM model will continue to evolve. Therefore, it is important to see the extent of the development of TAM research, especially on TAM on Banking, considering the benefits of applying the TAM model in banking are enormous and of course in the term of increasing customer loyalty and bank income. Some studies that are relevant to this discussion include Mittal & Gupta (2021) reviewing the bibliometric literature on mobile banking adoption; Susanti & Reza (2022) analyzing bibliometric and visualization of mobile banking research using VOSviewer; Preciado-Ortiz et al (2018) explain the bibliometric analysis of mobile banking adoption; Alves & Galega (2020) review bank services, information technology and the Technology Acceptance Model (TAM) using bibliometric analysis; and Patel & Siddiqui (2023) explain the banking service quality literature.

Based on some of the research above, there is no research that specifically discusses TAM on Banking using bibliometric studies. Therefore, this study aims specifically to see the development of "TAM on Banking" research around the world published by journals with this theme and see future research opportunities by formulating a future research agenda.

PREVIOUS STUDIES

The Technology Acceptance Model (TAM) is a theory that describes how individuals accept and adopt information systems or technology. According to this model, technology acceptance is influenced by user behavioral intentions, which are determined by perceptions of the usefulness and ease of use of technology in carrying out certain tasks. The main purpose of TAM is to explain the processes underlying technology acceptance and predict user behavior, as well as provide theoretical explanations for the successful implementation of technology (Marikyan & Papagiannidis, 2023).

TAM tries to deliver practical information for practitioners to understand the steps that need to be

taken before implementing a system. Technology acceptance according to TAM occurs in three stages, where external factors such as system design features play a role in triggering users' cognitive responses. This response includes perceptions of the ease of use and usefulness of the technology perceived by the user. These perceptions ultimately determine the user's behavioral intention to use the technology. The culmination of technology acceptance is the active use of the system by the individual, where the technology is actually used in daily actions (Marikyan & Papagiannidis, 2023).

Furthermore, the TAM theory also explains user behavioral intentions which are influenced by users' attitudes towards the technology, which is their general impression or subjective evaluation of the technology. This attitude can be influenced by various factors, including perceptions of the benefits gained from using the technology and the suitability of the technology to the user's needs and tasks. Using this approach, TAM attempts to provide a scientific and academic view of how the technology acceptance process occurs and how technology use can be predicted and explained. Through an understanding of users' behavioral perceptions and intentions, practitioners can take appropriate steps to ensure the successful implementation of technology in an organizational or community setting (Marikyan & Papagiannidis, 2023).

In the context of TAM, the most important factor in driving technology acceptance is how the technology is perceived as a useful and easy-to-use tool by users. If the technology is perceived as useful and easy to use, then the tendency to adopt and actively use it will increase. Therefore, the design and development of information systems that consider aspects of usefulness and ease of use will play an important role in achieving wider acceptance of technology.

The Technology Acceptance Model (TAM) has been used in the banking industry to understand the acceptance of internet and mobile banking by customers (Dash et al., 2011; Safeena et al., 2013; Ahmad, 2018). Examples of the use of TAM in the banking industry include being used to explain how attitudes determine internet banking adoption, examine student behavior in using mobile banking, identify factors that influence internet banking adoption, analyze factors that influence internet banking adoption including perceived usefulness and perceived ease of use, and others (Dash et al., 2011; Ahmad, 2018).

The Technology Acceptance Model (TAM) can provide several benefits to the banking industry. Some

of the main benefits of using TAM in the banking industry include serving as a tool for banks to understand customer behavior and attitudes towards new technologies, such as internet and mobile banking. By using this model to identify factors that influence customer adoption, banks can develop appropriate strategies to increase the level of customer acceptance and satisfaction with these technologies (Dash et al., 2011; Safeena et al., 2013). TAM also plays a significant role in helping banks predict the adoption of new technology by customers and employees. By assessing the perceived usefulness and ease of use of new technologies, banks can anticipate likely adoption rates and plan strategies accordingly (Ahmad, 2018). Furthermore, other benefits of TAM include informing the implementation of new technologies by providing insight into the factors that influence acceptance and adoption, improving customer experience by identifying the features and functionality that are most important to customers, and gaining competitive advantage by increasing the adoption and acceptance of new technologies (Hosein, 2009; Ly & Ly, 2022).

Thus, to see the extent of the current development of TAM on Banking, research needs to be done, and one method that can be used to see the development of research is bibliometrics using VosViewer. The method is able to create and display author journal maps and research paths based on co-citation data or keyword maps based on shared incident data. Furthermore, some studies that are relevant to this research include Al-Emran & Granić (2021) reviewing TAM and its application based on an analysis of 2399 articles published in the Web of Science database during the period (2010-2020). The main findings of this research show that the number of studies on TAM and its applications continues to increase, indicating that the application, modification, and extension of the model are still applicable in several applications and domains. E-commerce is at the top of TAM applications with more and more studies on recent emerging applications such as augmented reality. Banking, education, and healthcare are among the domains most frequently applied through TAM applications. Among several theories/models, the TPB Success Model, DeLone and McLean IS, and UTAUT have dominated integration with TAM in various applications.

Gupta et al (2022) explained the development of TAM research. The results revealed that early TAM research was conducted by both Eastern and Western scholars and has since continued to evolve and be

widely shared. Nonetheless, most TAM publications focus on the same narrow domains of computer science, social science, business, management, and accounting and the trendiest topics are usability, trust, ease of use, e-learning, adoption, e-commerce, and social media.

Molina-Collado et al (2021) identified the main research themes in consumer financial services between 2000 and 2020, their relative magnitude and interrelationships, to identify which themes were most influential and to map the evolution of the field and identify emerging and under-researched themes that hold promise for future research. The results concluded that customer satisfaction, innovation, corporate social responsibility (CSR), the Internet and consumer acceptance were the so-called main motor themes in the research period. Furthermore, five areas for further research were identified and discussed: Technology-related issues; marketing and consumer behavior; markets and industries; product and service development; and brands.

Other relevant research includes Mittal & Gupta (2021) bibliometric review of mobile banking adoption literature; Alves & Galeale (2020) review related to bank services, information technology and Technology Acceptance Model (TAM) using bibliometric analysis; Preciado-Ortiz et al (2018) explain bibliometric analysis of mobile banking adoption; Susanti & Reza (2022) bibliometric analysis and visualization of mobile banking research using VOSviewer; and Patel & Siddiqui (2023) explain banking service quality literature.

Based on some of the research above, there is no research that specifically discusses TAM on Banking using bibliometric studies. Therefore, this research was conducted to complement existing research and fill the void of previous research. The purpose of this research is specifically to see the development of "TAM on Banking" research around the world published by journals with this theme and see future research opportunities by formulating a future research agenda.

RESEARCH METHOD

In this study, various scientific journal publications related to the theme "TAM on Banking" around the world were used as data sources. Data is collected by searching for journal publications indexed in the Scopus database using the keyword "TAM on Banking". After that, scientific articles or journals that are relevant to the research theme will be selected based on the publication data that has been collected.

Journals equipped with DOI are the criteria in the screening process and data processing using software. There are 583 journal articles published from within the research theme "TAM on Banking". The development of publication trends related to the research topic was analyzed using VOSviewer software, which can generate bibliometric maps and allow for more detailed analysis.

In order to build the map, VOSviewer uses the abbreviation VOS which refers to Visualizing Similarity. In previous studies, the VOS mapping technique has been used to obtain bibliometric visualizations which are then analyzed. Furthermore, VOSviewer is able to create and display author journal maps based on co-citation data or keyword maps based on co-incidence data. Therefore, this study will analyze journal maps related to "TAM on Banking", including author maps, and keywords which are then analyzed for research paths that can be carried out in the future through clusters in keyword mapping.

This research uses a descriptive qualitative approach with meta-analysis and descriptive statistical literature study based on 583 journal publications that discuss the theme "TAM on Banking". Meta-analysis is a method that integrates previous research related to a particular topic to evaluate the results of existing studies. Furthermore, the qualitative method used in this research is also referred to as a constructive method, where the data collected in the research process will be constructed into themes that are easier to understand and meaningful. The sampling technique used in this research is purposive non-probability sampling method, which aims to fulfill certain information in accordance with the desired research objectives. Research using bibliometric analysis for the example can be found at Niswah (2020), Izza (2022), Ikhwan (2021), Muadzah (2022), Riani (2021), Ula & Maziyyah (2022), As-Salafiyah (2022), Sari (2022), and Ula (2022).

RESULTS AND DISCUSSION

This research discusses "TAM on Banking" by utilizing 583 publications of journal articles indexed in Scopus. Bibliometrics is a method used to measure and evaluate scientific performance by taking into account factors such as citations, patents, publications, and other more complex indicators. Bibliometric analysis is conducted to evaluate research activities, laboratories, and scientists, as well as the performance of countries and scientific specializations. Some of the steps in bibliometric analysis include identifying the

background of the research, collecting the databases to be used, and determining the main indicators to be used in the research.

This section will deepen the meta-analysis results by showing a visual mapping chart depicting 583 journals related to "TAM on Banking". In this study, mapping is done by analyzing keywords and important or unique terms contained in journal articles. Mapping is a process to identify knowledge elements, configurations, dynamics, dependencies, and interactions among these elements. The results of network visualization of 583 journals with the theme

"TAM on Banking" will be explained in more detail in the next section.

Bibliometric Author Mapping

Using bibliometric analysis using VOSviewer software, a mapping of authors contributing to the field of "TAM on Banking" was obtained. The resulting image provides a visual representation of the mapping, the larger and brighter the point marked in yellow, the greater the number of journal publications related to the theme "TAM on Banking" that have been published by that author.

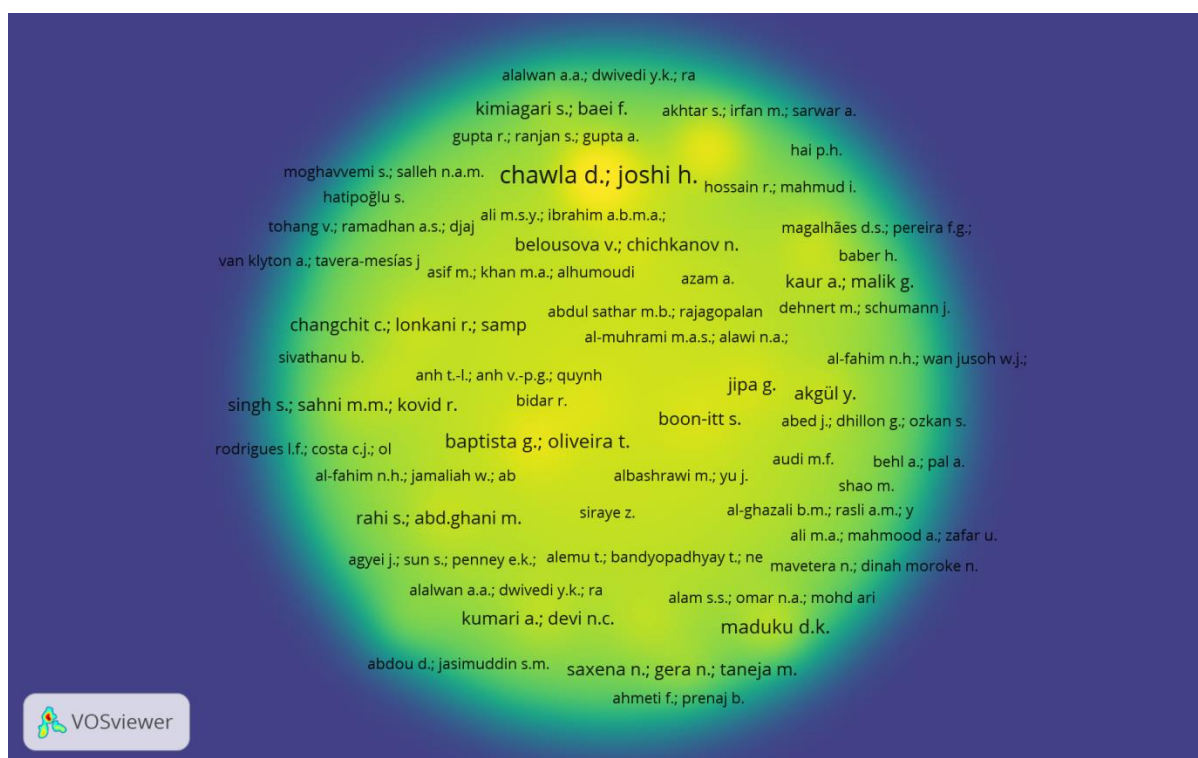


Figure 1: Bibliometric Author Mapping

The figure above explains that the cluster density in the bibliometric map depends on the intensity of the yellow color shown. And the yellow color on the map depends on how many items are related to other items. For this reason, this section is very important to get an overview of the general structure of the bibliometric map that is considered important to analyze. From this, it is possible to identify the authors who publish the most works.

In general, each author or researcher has different tendencies in each publication of their work. On some occasions, an author appears as a single author, but on other occasions the author may co-author with other authors or researchers, so this will

affect the cluster density and some clusters show different densities. However, authors who have a large enough cluster density identify that these authors have published the most research on the theme of "TAM on Banking", when compared to authors with lower cluster density, so the results found can be a reference for other researchers in the future. From the analysis results, it was found that the authors who published the most publications related to Social "TAM on Banking" were Chawla D.; Joshi H; Belousova V.; Chichkanov N; Baptista G.; Oliveira T.; Maduku D. K; Changchit C.; Lonkani R.; Samp; and Saxena N.; Gera N.; Taneja M.

Research Map

The figure below describes the trend of keywords that appear in research on the theme "TAM

on Banking" and the larger shape is the most used word in journal publications with the theme "TAM on Banking".

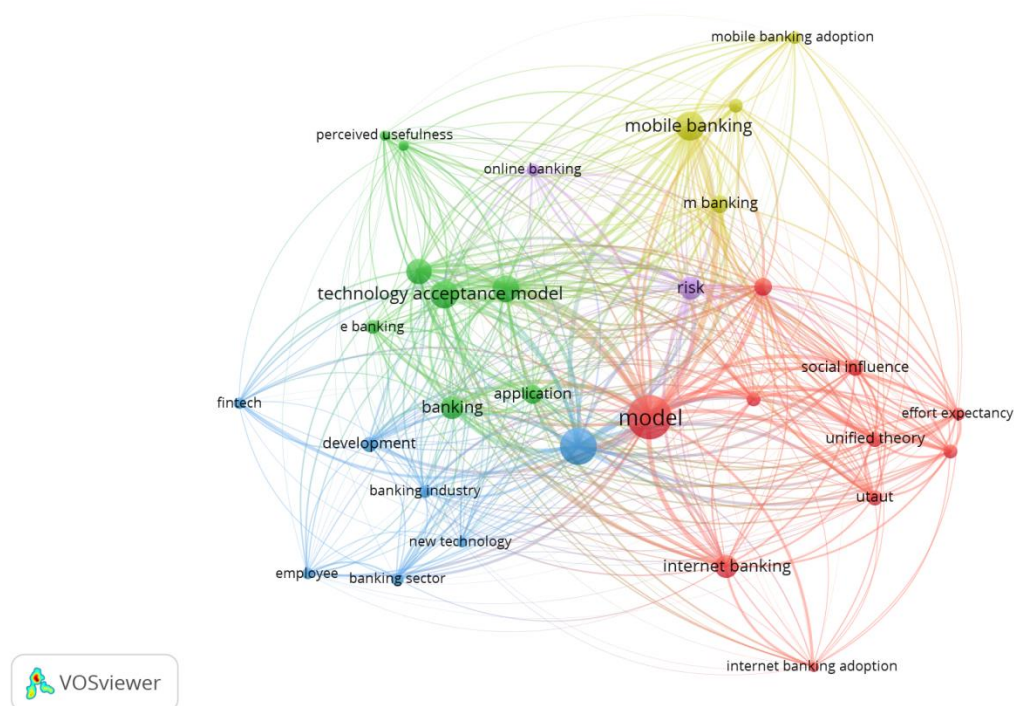


Figure 2: Research Cluster Mapping

As for the mapping, the keywords that appear most in the publication "TAM on Banking" include model, technology, technology acceptance model,

mobile banking, and usefulness, which are then divided into 5 clusters, as follows:

Table 1: Research Cluster

Cluster	Keywords
Cluster 1 (10 items)	Behavioral intention, behavioral intention, effort expectancy, internet banking, internet banking adoption, model, performance expectancy, social influence, unified theory, utaut
Cluster 2 (8 items)	Application, banking, e banking, perceived ease, perceived usefulness, tam, technology acceptance model, usefulness
Cluster 3 (7 items)	Banking industry, banking sector, development, employee, fintech, new technology, technology
Cluster 4 (4 items)	M banking, mobile banking, mobile banking adoption, mobile banking service
Cluster 5 (2 items)	Online banking, risk

Research maps that can be created based on 5 keyword mapping clusters, namely:

Cluster 1: Technology Adoption in Banking and its Influential Factors

In the first cluster, the topic discussed relates to technology adoption and its influencing factors in the

banking industry. There is quite a lot of research related to this topic, especially on the aspect of technology adoption. It's just that for aspects of the factors that influence technology adoption in banking, there are still quite a few done. Some studies that are relevant to the topics in the first cluster include [Afrizal & Vanany](#)

(2021) analyzing the decision-making model for the adoption of Auto-ID technology in the banking industry. In this study, it is explained that the justification for investing in Auto-ID (automatic identification) technology in banks aims to help practitioners solve banking problems. Specifically, this study aims to determine the importance of investing in Auto-ID technology in a company. This technology will be created in an integrated system that can be used to monitor important documents and assets in the bank with two alternatives that are suitable for this case, namely barcode and RFID. In the process of technology adoption, there are various forms of approaches ranging from strategic, economic, analytical and comprehensive where in terms of IT justification it is more suitable to use analytical and comprehensive, namely DEMATEL and ANP because it needs to capture intangible factors. In the DEMATEL calculation, the operator criteria group with the highest weight is eternity, followed by IT and economic optimization. In addition, it was also found that the most influential recipient groups were satisfaction, cost savings, and expansion. Then in the ANP method, the results of the calculation of the global weight of the criteria with the highest value are opportunities, followed by benefits, costs, and risks. So that the alternative decision obtained is RFID is the technology chosen for adoption in the banking industry.

Nayanajith (2021) discussed the perceived trust of E-Services, perceived usefulness and E-banking adoption among Kelaniya University students. This study states that through principal component analysis, factors that influence perceived trust in electronic services have been identified. The Technology Acceptance Model (TAM) was extended by considering perceived trust towards e-services. The results showed that there is empirical evidence to support the two hypotheses stating that there is a positive relationship between perceived trust towards electronic services and perceived usefulness in adopting electronic banking services (e-banking). In addition, the research findings also revealed that e-banking adoption differs with respect to several demographic variables. The results also support the third hypothesis which states that there is a difference in e-banking adoption between low-income and high-income category customers.

Siadat et al (2019) explained the adoption factors of SOA in e-banking. This research explains that currently the lack of integration between software services and databases has become a major IT problem in many organizations including the banking industry.

Service oriented architecture (SOA) is the latest and comprehensive method among various methods and technologies proposed for integrity implementation. One of the main reasons for banks' failure to achieve the benefits of SOA is the lack of a framework that covers all the important factors in SOA adoption. The final results of investigation and interpretation of empirical data show that organizational, technical, human and environmental factors are critical for SOA adoption.

Adapa & Cooksey (2013) analyzed the factors that influence consumers to continue using internet banking. This study confirms that the pattern of continued internet banking usage has been overlooked as most existing studies focus on consumer adoption or acceptance of internet banking. However, compared to the acquisition of new customers, measures of continued use of internet banking are important as they relate to cost-effective marketing strategies aimed at retaining customers. Furthermore, after the accuracy of the data was tested in the study, an exploratory factor analysis was conducted to identify the key factors related to the use of internet banking services. The five factors were technology factors, channel factors, social factors, value for money, and sustainable use factors. The final factors that emerged were then used in a hierarchical multiple regression analysis to test the proposed framework. The results of the analysis show that value for money, channel factors, and technology factors have a significant effect in predicting consumers' frequency and persistence in using internet banking services.

Other relevant research includes Alhudaithy & Kitchen (2009) discussing Rethinking models for technology adoption in internet banking; Ozdemir & Trott (2009) exploring the adoption of internet banking service innovations; Rahi et al (2019) explaining the integration of the UTAUT model in the context of internet banking adoption; Mujahed et al (2020) examining mobile banking adoption in organizations; and Alalawi & Al-Qallaf (2022) explaining the mobile technology adoption model for Bahrain Bankers.

Cluster 2: Acceptance of Technology in Banking

Research on this topic has been conducted previously, among the relevant ones, Baptista & Oliveira (2017) identified the potential impact of utilizing game mechanics and game design techniques in the acceptance of mobile banking services. The results found that there is a direct and strong relationship between gamification and intention to use

mobile banking services, which supports that, if used and designed correctly, gamification can help make banking activities more interesting, more engaging, and more fun, and in turn increase customer acceptance, engagement, and satisfaction.

Alsajjan & Dennis (2010) proposed a revised technology acceptance model to measure consumer acceptance of Internet banking, the Internet banking acceptance model (IBAM). The results show the importance of attitude, such that attitudinal and behavioral intentions appear as one factor, denoted as "attitudinal intentions" (AI). Structural equation modeling confirmed the fit of the model, where perceived usefulness and trust fully mediated the impact of subjective norms and perceived manageability on AI. Invariance analysis showed psychometric equivalence of the IBAM measures between the two country groups. At the structural level, the influence of trust and system usability on AI varied between the two countries, emphasizing the potential role of culture in IS adoption.

Nasri & Charfeddine (2012) empirically examined the factors influencing the adoption of Internet banking by Tunisian bank customers. Theoretically, this study confirmed the applicability of the TAM and TPB models in predicting the adoption of internet banking by Tunisian bank customers. The results enable bank decision makers to develop strategies that can encourage the adoption of internet banking. Banks should enhance security and privacy to protect consumers' personal and financial information, which will increase user trust. The government should also play a role to support the banking industry by having clear and solid laws that will ensure that customers are more confident to use internet banking, ensure better internet infrastructure and help them encourage users to use internet banking. Lastly, Tunisian Banks should focus on clients who already have a home PC, Internet access and are more educated and younger as they are the most likely to adopt Internet banking.

Tarhini et al (2016) investigated the factors that may hinder or facilitate the acceptance and use of Internet Banking (IB) in Lebanon. The structural path results revealed that performance expectancy (PE), social influence, PC and TTF to be significant predictors in influencing customers' behavioral intention (BI) to use IB and explained 61 percent of its variance, with PE found to be the strongest antecedent of BI. In contrast to UTAUT, the effect of effort expectancy on BI was not significant. In addition, both

BI and facilitating conditions were found to influence actual usage behavior and explained 64 percent of its variance. Practical implications: This study will help bank managers and policy makers to explain the current relatively low penetration rate of IB in formulating strategies to encourage the adoption and acceptance of IB by Lebanese customers, where IB is still considered an innovation.

Other relevant research includes Afshan & Sharif (2016) examining the acceptance of the mobile banking framework in Pakistan; Ooi & Tan (2016) discussing the mobile technology acceptance model based on an investigation using mobile users to explore smartphone credit cards; Yousafzai (2010) explaining internet banking behavior; Al-Somali et al (2009) investigating the acceptance of online banking in Saudi Arabia; Baptista & Oliveira (2015) understanding mobile banking through an integrated technology acceptance and use theory combined with cultural moderators; and Martins et al (2014) understanding Internet Banking adoption.

Cluster 3: Technological Innovation in the Banking Sector

Some of the research relevant to this topic includes Flejterski & Labun (2016) reviewing and categorizing the main trends affecting the financial industry environment based on various empirical and non-empirical works from other authors, followed by a synthetic review of how incumbents and entrants innovate in the race to design a valid new business model. The financial sector plays a pivotal role in the development of the contemporary economy, which is unlikely to ever change due to its systemic nature. However, conventional banking is becoming a thing of the past as significant changes in demographic, social, technological, economic, regulatory and legitimacy-related aspects of the banking reality are altering the viability of current business models, pressing for radical adjustments. Banks also find themselves under pressure from shadow banks, FinTech companies and lower-cost challenger banks as the number of entries into the sector has increased. Non-bank financial institutions have a distinct advantage over traditional banks due to different competencies and while they pose a threat of disruption, they also crave some of the resources that banks have access to. The study concluded that convergence between the two types of financial entities is likely, ending conventional banking. The research projects that business models will evolve towards an opti-channel approach, where continuous innovation

enables an alliance of banks and emerging FinTech companies to reach customers through their most preferred channels and offer highly individualized services.

Haabazoka (2019) examines the effect of technological innovation on the performance of Commercial Banks in developing countries. This research is motivated by the Zambian financial sector which has undergone significant transformation in recent years. Commercial banks continue to use large investments in technology-based innovation and workforce training to handle new technologies. The results revealed that bank technological innovation has a positive effect on the financial performance of commercial banks in Zambia. It was also established that mobile banking transactions have a strong positive influence on the financial performance of commercial banks in Zambia while internet banking transactions have a weak relationship with the financial performance of commercial banks in Zambia. ATM transactions also had a strong positive influence on the financial performance of commercial banks' financial performance in Zambia.

Martino (2021) explores the impact of blockchain technology on banks, specifically how blockchain technology can create new opportunities for banks and pose new threats to the banking business. The digital revolution in the banking industry has resulted in significant changes over the past few years. Customers are increasingly adapting to new technologies and emerging competitors, as well as innovative solutions in the space, are pushing banks to substantially revise their business models and strategies. One of the technological innovations in the spotlight is blockchain distributed ledger technology (DLT), which has the potential to transform the entire banking industry with a more immediate and disruptive impact than ever before. As the underlying technology for Bitcoin, blockchain can facilitate recording transactions and tracking asset movements with high efficiency, finding wide applications in various fields. In the financial sector, blockchain is recognized as a disruptive force and a major source of future financial market innovation, with the potential to transform existing business models within the financial services industry. In the context of the banking industry, the literature shows that blockchain brings new challenges and opportunities that encourage banks to comprehensively revise their operations, business models, and strategies.

Wang et al (2021) explain institutional quality, bank finance and technological innovation. The introduction of new technologies in the fourth industrial revolution (4IR) has increased world income manifold. In this context, the 4IR poses unprecedented implications for the banking sector. The cointegration results of Westerlund's (2007) method indicate the existence of a stable long-run relationship between variables. To estimate the long-run coefficients of the explanatory variables, this study uses the CS-ARDL method. The results show that bank finance, institutional quality, high-tech exports, and GDP are positively associated with technological innovation. In terms of policy implications, this study recommends that for industries to adopt innovative technologies, large-scale and illiquid capital investment is a prerequisite. Therefore, access to finance should be eased, enabling firms to implement advanced technologies and undertake costly innovation ventures.

Other relevant studies are Chedrawi et al (2019) examining E-banking and innovation adoption from the perspective of transaction cost theory; Rishi & Saxena (2004) explaining technological innovation in the Indian banking industry; Bajada & Trayler (2015) explaining technology-based service innovation in the banking industry; Zhao et al (2019) analyzing financial service innovation strategies to enhance the competitive advantage of the Chinese banking industry during the Fintech revolution; and Buzzacchi et al (1995) examining technological regimes and innovation in services based on the case of the Italian banking industry.

Cluster 4: Mobile Banking Service Adoption

There has been a lot of research on this topic, including Mortimer (2015) examining the motivators that influence consumer intention to use mobile banking. The results showed that for Australian consumers, perceived ease of use, perceived usefulness (PU) and perceived risk (PR) are the main determinants of mobile banking adoption. For Thai consumers, the main factors are PU, PR and social influence. National culture was found to have an impact on the key antecedents leading to m-banking adoption.

Shareef et al (2018) discussed consumer intentions to choose mobile banking service delivery channels from behavioral, technological, social, cultural, and organizational perspectives for three different stages such as static services, interactions, and transactions. The results revealed that the drivers of consumers' behavioral intention to adopt mobile

banking in the static service, interaction, and transaction phases are significantly different, making important theoretical and practical contributions.

Shankar et al (2020) investigated a comprehensive moderated mediated mechanism to enhance m-banking adoption behavior through triggering positive EWOM using the elaboration likelihood model (ELM). Mobile Banking (M-Banking) is the fastest growing and most cost-effective channel for delivering banking services. Electronic word of mouth (EWOM) plays an important role in the success of e-commerce. The results show that triggers, argument quality, valence, and consistency increase the intention to adopt m-banking. These effects are mediated by initial trust in m-banking. The mediating effect of initial trust between valence-intention varies between high and low consumer involvement in m-banking.

Lin (2011) examined the influence of innovation attributes (perceived relative advantage, ease of use and compatibility) and knowledge-based trust (perceived competence, benevolence and integrity) on potential customer attitudes and behaviors. Rapid advances in mobile technology and devices have made mobile banking increasingly important in mobile commerce and financial services. The results concluded that perceived relative advantage, ease of use, compatibility, competence and integrity significantly influenced attitudes, which in turn led to behavioral intentions to adopt (or continue using) a mobile bank. In addition, using multi-group analysis with T-statistics, the results found that the antecedents of attitudes towards mobile banking differ between potential and repeat customers.

Other relevant research includes Zhou (2012) examining user adoption of mobile banking from the perspective of trust and flow experience; Poon (2008) examining user adoption of E-Banking services based on Malaysian perspectives; Riquelme & Rios (2010) explaining the moderating effect of gender in mobile banking adoption; Oliveira et al (2014) expanding the understanding of mobile banking adoption; Shaikh & Karjaluoto (2015) examining mobile banking adoption; and Alalwan et al (2017) explaining the factors influencing mobile banking adoption by Jordanian bank customers.

Cluster 5: Risks in Online Banking Services

In the last cluster of this research, the topic discussed is related to the risk of online banking services. Research that specifically discusses this topic is still quite rare. This proves that there are more

studies discussing technology adoption in banking than specifically discussing the risks of online banking services which are one of the banking products. Some studies that discuss the risks of relevant online banking services include Zabala Aguayo & Ślusarczyk (2020) investigating possible threats in diversification management, operational risks of banking services in the digitalization process, and their impact on customers and banks. The results of the study found that the total value of operational risk was calculated and the acceptability of this indicator for Santander Bank's capital was assessed, which allowed the authors to judge whether its value is of great importance. In addition, it was also revealed that the main external risk of Santander Bank in 2018 was fraud in the use of online payments. These results allow helping to more effectively evaluate insurance payments for identified operational risks and effectively make decisions and optimize the bank's reporting documents.

Kaur & Arora (2020) revisited the role of perceived risk in online banking, using an alternative view of trust as a moderator on the relationship between perceived risk and behavioral intention (BI). The results showed that perceived risk as a multi-dimensional construct has a direct and indirect impact on BI through performance expectancy, social influence, hedonic motivation and price value. In addition, it was found that trust moderates the relationship between perceived risk and BI.

Aldás-Manzano et al (2019) analyzed how consumer innovation can be used as a variable to positively influence the adoption of internet banking both directly and reduce consumers' perceived risk. The results revealed consumer innovation as a key construct to increase the adoption of e-banking both directly and with an effective role in reducing consumers' risk perception of using internet channels in the context of financial services.

Kesharwani & Singh Bisht (2012) extended the technology acceptance model (TAM) in the context of internet banking adoption in India under security and privacy threats. The analysis revealed that perceived risk has a negative impact on behavioral intention of adoption and trust of internet banking has a negative impact on perceived risk. A well-designed website was also found to be helpful in facilitating easier usage and also minimizing perceived risk issues regarding the use of internet banking.

CONCLUSION

This study aims to determine the extent of the development of research on the theme of "TAM on Banking" in the world. The results of the study show that the number of research publications related to "TAM on Banking" is 583 Scopus indexed journal articles. Furthermore, based on the results of the analysis on bibliometric author mapping, it shows that Chawla D.; Joshi H; Belousova V.; Chichkanov N; Baptista G.; Oliveira T.; Maduku D. K; Changchit C.; Lonkani R.; Samp; and Saxena N.; Gera N.; Taneja M are the authors who have published the most on the theme of "TAM on Banking". Furthermore, in the development of research related to "TAM on Banking" based on bibliometric keyword mapping, it is divided into 5 clusters with the most used words are model, technology, technology acceptance model, mobile banking, and usefulness. Based on frequently used keywords, it can then be grouped into 5 research map clusters with topics that discuss (1)Technology Adoption in Banking and its Influential Factors, (2)Acceptance of Technology in Banking, (3)Technological Innovation in the Banking Sector, (4)Mobile Banking Service Adoption, and (5)Risks in Online Banking Services.

REFERENCES

- Adapa, S., & Cooksey, R. (2013). Factors affecting consumer's continued use of Internet banking: Empirical Evidence from Australia. *Australasian Journal of Information Systems*, 18(1). <https://doi.org/10.3127/ajis.v18i1.751>
- Afrizal, F., & Vanany, I. (2021, February). Decision-making model for Auto-ID technology adoption in the banking industry. In *IOP Conference Series: Materials Science and Engineering* (Vol. 1072, No. 1, p. 012002). IOP Publishing. <https://doi.org/10.1088/1757-899x/1072/1/012002>
- Afshan, S., & Sharif, A. (2016). Acceptance of mobile banking framework in Pakistan. *Telematics and Informatics*, 33(2), 370-387. <https://doi.org/10.1016/j.tele.2015.09.005>
- Ahmad, M. (2018). Review of the technology acceptance model (TAM) in internet banking and mobile banking. *International Journal of Information Communication Technology and Digital Convergence*, 3(1), 23-41.
- Ajibade, P. (2018). Technology Acceptance Model Limitations and Criticisms: Exploring the Practical Applications and Use in Technology-related Studies, Mixed-method, and Qualitative Researches.
- Alalawi, M. S. M., & Al-Qallaf, A. (2022, May). Adoption Model of Mobile Technologies for Bahrain Bankers. In *European, Asian, Middle Eastern, North African Conference on Management & Information Systems* (pp. 311-325). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-17746-0_26
- Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2017). Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust. *International Journal of Information Management*, 37(3), 99-110. <https://doi.org/10.1016/j.jinfomgt.2017.01.002>
- Aldás-Manzano, J., Lassala-Navarré, C., Ruiz-Mafé, C., & Sanz-Blas, S. (2009). The role of consumer innovativeness and perceived risk in online banking usage. *International Journal of Bank Marketing*, 27(1), 53-75. <https://doi.org/10.1108/02652320910928245>
- Al-Emran, M., & Granić, A. (2021). Is it still valid or outdated? A bibliometric analysis of the technology acceptance model and its applications from 2010 to 2020. *Recent advances in technology acceptance models and theories*, 1-12.
- Alhudaithy, A. I., & Kitchen, P. J. (2009). Rethinking models of technology adoption for internet banking: The role of website features. *Journal of Financial Services Marketing*, 14, 56-69. <https://doi.org/10.1057/fsm.2009.4>
- Alsajjan, B., & Dennis, C. (2010). Internet banking acceptance model: Cross-market examination. *Journal of business research*, 63(9-10), 957-963. <https://doi.org/10.1016/j.jbusres.2008.12.014>
- Al-Somali, S. A., Gholami, R., & Clegg, B. (2009). An investigation into the acceptance of online banking in Saudi Arabia. *Technovation*, 29(2), 130-141. <https://doi.org/10.1016/j.technovation.2008.07.004>
- Alves, V. L. M. F., & Galeale, N. V. (2020). Serviços bancários, tecnologia da informação e Technology Acceptance Model (TAM)-um estudo bibliométrico/Banking, information technology and Technology Acceptance Model (TAM)-a bibliometric study. *Brazilian Journal of Development*, 6(4), 18155-18170. <https://doi.org/10.34117/bjdv6n4-110>

- As-Salafiyah, A. (2022). Formulating Halal-Based Hospital Indicators. *Halal Tourism and Pilgrimage*, 2(1).
- Bajada, C., & Trayler, R. (2015). Technology-driven service innovation in the banking industry. *The handbook of service innovation*, 319-343.
- Baptista, G., & Oliveira, T. (2015). Understanding mobile banking: The unified theory of acceptance and use of technology combined with cultural moderators. *Computers in Human Behavior*, 50, 418-430. <https://doi.org/10.1016/j.chb.2015.04.024>
- Baptista, G., & Oliveira, T. (2017). Why so serious? Gamification impact in the acceptance of mobile banking services. *Internet Research*, 27(1), 118-139. <https://doi.org/10.1108/intr-10-2015-0295>
- Baron, S., Patterson, A., & Harris, K.S. (2006). *Beyond Technology Acceptance: Understanding Consumer Practice*. <https://doi.org/10.1108/09564230610656962>
- Buzzacchi, L., Colombo, M. G., & Mariotti, S. (1995). Technological regimes and innovation in services: the case of the Italian banking industry. *Research Policy*, 24(1), 151-168. <https://doi.org/10.1016/0048-7333%2893%2900756-j>
- Cahyaning, E.K. (2020). Evaluation of Acceptance of Branch Delivery System Information Technology Systems in Banking Using the Technology Acceptance Model (TAM). *ABIS: Accounting and Business Information Systems Journal*. <https://doi.org/10.22146/abis.v4i1.59339>
- Chedrawi, C., Harb, B., & Saleh, M. (2019). The E-banking and the adoption of innovations from the perspective of the transaction cost theory: The case of the largest commercial banks in Lebanon. *ICT for a Better Life and a Better World: The Impact of Information and Communication Technologies on Organizations and Society*, 149-164. https://doi.org/10.1007/978-3-030-10737-6_10
- Chuttur, M.Y. (2009). Overview of the Technology Acceptance Model: Origins, Developments and Future Directions.
- Dash, M., Mohanty, A. K., Pattnaik, S., Mohapatra, R. C., & Sahoo, D. S. (2011). Using the TAM model to explain how attitudes determine adoption of internet banking. *European Journal of Economics, Finance and Administrative Sciences*, 36(1), 50-59.
- Flejterski, S., & Labun, J. (2016). The banking industry and digital innovation: in search of new business models and channels. *European Journal of Service Management*, 20, 5-15. <https://doi.org/10.18276/ejsm.2016.20-01>
- Gupta, S., Abbas, A. F., & Srivastava, R. (2022). Technology Acceptance Model (TAM): A bibliometric analysis from inception. *Journal of Telecommunications and the Digital Economy*, 10(3), 77-106.
- Haabazoka, L. (2019). A study of the effects of technological innovations on the performance of commercial banks in developing countries-A case of the zambian banking industry. In *The Future of the Global Financial System: Downfall or Harmony 6* (pp. 1246-1260). Springer International Publishing. https://doi.org/10.1007/978-3-030-00102-5_132
- Hosein, N. Z. (2009). Internet banking: An empirical study of adoption rates among Midwest community banks. *Journal of Business & Economics Research (JBER)*, 7(11). <http://dx.doi.org/10.19030/jber.v7i11.2355>
- Huang, J., & Lee, Y. (2012). Predicting telecare adoption on senior citizens in institutions: Application of the technology acceptance model. *Journal of Statistics and Management Systems*, 15, 81 - 92. <https://doi.org/10.1080/09720510.2012.10701614>
- Huda, M.Q., Hidayah, N.A., Khudzaeva, E., Lubis, A.B., Zulkifli, & Sujoko, I. (2021). IT Adoption and Implementation on Pre-Implementation Phase: the Case of State Islamic University in Indonesia. *2021 9th International Conference on Cyber and IT Service Management (CITSM)*, 1-5. <https://doi.org/10.1109/CITSM52892.2021.9587926>
- Ikhwan, I. (2021). Text analytic on halal research. *Journal of Islamic Economic Literatures*, 2(2).
- Izza, N. N. (2022). Bibliometric Mapping of Halal Fashion Research Development With Scopus Index. *Journal of Islamic Economic Literatures*, 3(2).
- Kaur, S., & Arora, S. (2020). Role of perceived risk in online banking and its impact on behavioral intention: trust as a moderator. *Journal of Asia*

- Business Studies, 15(1), 1-30.
<https://doi.org/10.1108/jabs-08-2019-0252>
- Kesharwani, A., & Singh Bisht, S. (2012). The impact of trust and perceived risk on internet banking adoption in India: An extension of technology acceptance model. *International journal of bank marketing*, 30(4), 303-322.
<https://doi.org/10.1108/02652321211236923>
- Lim, W.M. (2018). Dialectic Antidotes to Critics of the Technology Acceptance Model: Conceptual, Methodological, and Replication Treatments for Behavioural Modeling in Technology-Mediated Environments. *Australas. J. Inf. Syst.*, 22.
<https://doi.org/10.3127/AJIS.V22I0.1651>
- Lin, H. F. (2011). An empirical investigation of mobile banking adoption: The effect of innovation attributes and knowledge-based trust. *International journal of information management*, 31(3), 252-260.
<https://doi.org/10.1016/j.ijinfomgt.2010.07.006>
- Ly, B., & Ly, R. (2022). Internet banking adoption under technology acceptance model-Evidence from Cambodian users. *Computers in Human Behavior Reports*, 7, 100224.
<https://doi.org/10.1016/j.chbr.2022.100224>
- Marikyan, D. & Papagiannidis, S. (2023) Technology Acceptance Model: A review. In S. Papagiannidis (Ed), *TheoryHub Book*. Available at <http://open.ncl.ac.uk> / ISBN: 9781739604400
- Martín-García, A.V., Martínez-Abad, F., & Reyes-González, D. (2019). TAM and stages of adoption of blended learning in higher education by application of data mining techniques. *Br. J. Educ. Technol.*, 50, 2484-2500.
<https://doi.org/10.1111/BJET.12831>
- Martino, P. (2021). *Blockchain and banking: How technological innovations are shaping the banking industry*. Springer Nature.
<https://doi.org/10.1007/978-3-030-70970-9>
- Martins, C., Oliveira, T., & Popović, A. (2014). Understanding the Internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. *International journal of information management*, 34(1), 1-13.
<https://doi.org/10.1016/j.ijinfomgt.2013.06.002>
- Mittal, G., & Gupta, P. (2021, December). A bibliometric review of Mobile Banking adoption literature. In *Proceedings of the International Conference on Advances in Management Practices* (ICAMP 2021).
<https://dx.doi.org/10.2139/ssrn.3993160>
- Molina-Collado, A., Salgado-Sequeiros, J., Gómez-Rico, M., Aranda García, E., & De Maeyer, P. (2021). Key themes in consumer financial services research from 2000 to 2020: a bibliometric and science mapping analysis. *International Journal of Bank Marketing*, 39(7), 1446-1478. <https://doi.org/10.1108/IJBM-01-2021-0043>
- Mortimer, G., Neale, L., Hasan, S. F. E., & Dunphy, B. (2015). Investigating the factors influencing the adoption of m-banking: a cross cultural study. *International Journal of bank marketing*, 33(4), 545-570. <https://doi.org/10.1108/ijbm-07-2014-0100>
- Mu'adzah, N. (2022). Ushul Fiqh, Qaidah Fiqhiyyah, and Islamic Jurisprudence: A Review. *Journal of Islamic Economics Literatures*, 3(2).
- Mujahed, H. M., Ahmed, E. M., & Samikon, S. A. (2020). Mobile banking adoption in organizations: a review of empirical literature. *International Journal of Innovative Science and Research Technology*, 5(9), 405-410.
<https://doi.org/10.38124/ijisrt20sep288>
- Nasri, W., & Charfeddine, L. (2012). Factors affecting the adoption of Internet banking in Tunisia: An integration of theory of acceptance model and theory of planned behavior. *The journal of high technology management research*, 23(1), 1-14.
<https://doi.org/10.1016/j.hitech.2012.03.001>
- Nayanajith, D. A. G. (2021). Perceived trust of E-services, perceived usefulness and adoption of E-banking among the students of University of Kelaniya: A relational study. *Vidyodaya Journal of Management*, 7(1).
<https://doi.org/10.31357/vjm.v7i1.4917>
- Niswah, I. D. (2020). A Review of Zakat Studies in ASEAN. *Ekonomi Islam Indonesia*, 2(1).
- Oliveira, T., Faria, M., Thomas, M. A., & Popović, A. (2014). Extending the understanding of mobile banking adoption: When UTAUT meets TTF and ITM. *International journal of information management*, 34(5), 689-703.
<https://doi.org/10.1016/j.ijinfomgt.2014.06.004>
- Ooi, K. B., & Tan, G. W. H. (2016). Mobile technology acceptance model: An investigation using mobile users to explore smartphone credit cards. *Expert Systems with Applications*, 59, 33-46.
<https://doi.org/10.1016/j.eswa.2016.04.015>

- Ozdemir, S., & Trott, P. (2009). Exploring the adoption of a service innovation: A study of Internet banking adopters and non-adopters. *Journal of Financial Services Marketing*, 13, 284-299. <https://doi.org/10.1057/fsm.2008.25>
- Patel, R. J., & Siddiqui, A. (2023). Banking service quality literature: a bibliometric review and future research agenda. *Qualitative Research in Financial Markets*. <https://doi.org/10.1108/QRFM-01-2022-0008>
- Poon, W. C. (2008). Users' adoption of e-banking services: the Malaysian perspective. *Journal of business & industrial marketing*, 23(1), 59-69. <https://doi.org/10.1108/08858620810841498>
- Preciado-Ortiz, C. L., Gilsanz López, A., & Vargas-Barraza, J. A. (2018). Mobile banking adoption: a bibliometric analysis. *Revista de Dirección y Administración de Empresas*. <http://hdl.handle.net/10810/32206>
- Putri, D.L., & Fithrie, S. (2019). The Effect of Risk, Benefits and Ease of Use on Customer Trust in Using Internet Banking in Pekanbaru.
- Rahi, S., Mansour, M. M. O., Alghizzawi, M., & Alnaser, F. M. (2019). Integration of UTAUT model in internet banking adoption context: The mediating role of performance expectancy and effort expectancy. *Journal of Research in Interactive Marketing*, 13(3), 411-435. <https://doi.org/10.1108/jrim-02-2018-0032>
- Riani, R. (2021). A Literature Review on Islamic Donation. *International Journal of Waqf*, 1(1).
- Riquelme, H. E., & Rios, R. E. (2010). The moderating effect of gender in the adoption of mobile banking. *International Journal of bank marketing*, 28(5), 328-341. <https://doi.org/10.1108/02652321011064872>
- Rishi, M., & Saxena, S. C. (2004). Technological innovations in the Indian banking industry: the late bloomer. *Accounting, Business & Financial History*, 14(3), 339-353. <https://doi.org/10.1080/0958520042000277801>
- Safeena, R., Date, H., Hundewale, N., & Kammani, A. (2013). Combination of TAM and TPB in internet banking adoption. *International Journal of Computer Theory and Engineering*, 5(1), 146.
- Sánchez-Prieto, J.C., Cruz-Benito, J., Therón, R., & García-Peñalvo, F.J. (2019). How to Measure Teachers' Acceptance of AI-driven Assessment in eLearning: A TAM-based Proposal. *Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality*. <https://doi.org/10.1145/3362789.3362918>
- Sari, M. (2022). Halal Food Quality and The SDG-3 Goal. *Halal Tourism and Pilgrimage*, 2(1).
- Shaikh, A. A., & Karjaluo, H. (2015). Mobile banking adoption: A literature review. *Telematics and informatics*, 32(1), 129-142. <https://doi.org/10.1016/j.tele.2014.05.003>
- Shankar, A., Jebarajakirthy, C., & Ashaduzzaman, M. (2020). How do electronic word of mouth practices contribute to mobile banking adoption? *Journal of Retailing and Consumer Services*, 52, 101920. <https://doi.org/10.1016/j.jretconser.2019.101920>
- Shareef, M. A., Baabdullah, A., Dutta, S., Kumar, V., & Dwivedi, Y. K. (2018). Consumer adoption of mobile banking services: An empirical examination of factors according to adoption stages. *Journal of Retailing and Consumer Services*, 43, 54-67. <https://doi.org/10.1016/j.jretconser.2018.03.003>
- Siadat, S. H., Shokohyar, S., & Shafahi, S. (2019). SOA adoption factors in e-banking: An empirical analysis from the practical perspective. *International Journal of Information Systems in the Service Sector (IJISSS)*, 11(1), 25-39. <https://doi.org/10.4018/ijiss.2019010102>
- Susanti, M., & Reza, H. K. (2022). A Bibliometric and Visualized Analysis of Mobile Banking Research Using VOSviewer. *East Asian Journal of Multidisciplinary Research*, 1(10), 2377-2388. <https://doi.org/10.55927/eajmr.v1i10.1947>
- Tarhini, A., El-Masri, M., Ali, M., & Serrano, A. (2016). Extending the UTAUT model to understand the customers' acceptance and use of internet banking in Lebanon: A structural equation modeling approach. *Information Technology & People*, 29(4), 830-849. <https://doi.org/10.1108/itp-02-2014-0034>
- Uula, M. M. (2022). Research Map on Islamic Audit Literatures. *Review on Islamic Accounting*, 2(2).
- Uula, M. M., & Maziyyah, N. (2022). How Far Has Zakat Efficiency been Researched?. *Islamic Social Finance*, 2(1).
- Wang, C., Qiao, C., Ahmed, R. I., & Kirikkaleli, D. (2021). Institutional quality, bank finance and technological innovation: a way forward for the fourth industrial revolution in BRICS economies. *Technological Forecasting and*

- Social Change, 163, 120427.
<https://doi.org/10.1016/j.techfore.2020.120427>
- Xu, Z., Zhang, C., & Ling, H. (2008). A Contextual Acceptance Model of Mobile Commerce Based on TAM. 2008 The Third International Multi-Conference on Computing in the Global Information Technology (iccg 2008), 75-79.
<https://doi.org/10.1109/ICCGI.2008.13>
- Yousafzai, S. Y., Foxall, G. R., & Pallister, J. G. (2010). Explaining internet banking behavior: theory of reasoned action, the ory of planned behavior, or technology acceptance model. *Journal of applied social psychology*, 40(5), 1172-1202.
<https://doi.org/10.1111/j.1559-1816.2010.00615.x>
- Zabala Aguayo, F., & Ślusarczyk, B. (2020). Risks of banking services' digitalization: The practice of diversification and sustainable development goals. *Sustainability*, 12(10), 4040.
<https://doi.org/10.3390/su12104040>
- Zhao, Q., Tsai, P. H., & Wang, J. L. (2019). Improving financial service innovation strategies for enhancing china's banking industry competitive advantage during the fintech revolution: A Hybrid MCDM model. *Sustainability*, 11(5), 1419. <https://doi.org/10.3390/su11051419>
- Zhou, T. (2012). Examining mobile banking user adoption from the perspectives of trust and flow experience. *Information Technology and Management*, 13, 27-37.
<https://doi.org/10.1007/s10799-011-0111-8>