REVIEW PAPER

International Journal of Consumer Studies WILEY

Past, present and future of mobile financial services: A critique, review and future agenda

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Abstract

Mobile financial services (MFS) have been a powerful innovation to provide costeffective services and wide coverage to the unbanked population of the world. The topic has gained considerable attention from researchers but lacks a clear guideline or directions for future prospects. Therefore, this article presents a systematic literature review on MFS adoption. Using the Web of Science database, the paper reviewed 118 articles and revealed significant models, conceptual frameworks, antecedents and variables that explain consumers' adoption of MFS. The paper also outlines highly cited authors, studies and journals utilizing international platforms such as Google Scholar, ResearchGate and SCImago Journal Ranking. The findings of the systematic literature review indicate the technology acceptance model (TAM) followed by the unified theory of acceptance and use of technology (UTAUT) as the leading conceptual framework, and MFS adoption antecedents can be organized into six different categories, viz. Cognitive determinants, affective determinants, socialbased determinants, trust-based determinants, barrier-based determinants and consumer-based determinants. The paper concluded with an agenda for future studies with corresponding gaps in the literature.

KEYWORDS

mobile banking, mobile financial services, mobile money, mobile payment, systematic literature review

1 | INTRODUCTION

The eighth goal of sustainable development goals (SDGs) aims to strengthen financial institutions and ensure universal access to financial services by the year 2030. In this regard, mobile financial services have become an influential instrument in stimulating financial inclusion in developing countries. These services have created a dynamic platform by extending the reach and access to financial services to those who have insufficient resources and restricted access to conventional banking (Sihvonen, 2006). As reported by Global System for Mobile communications Association (GSMA), nearly 2.5 billion people in developing countries are unbanked and rely on cash or informal sources for their financial requirements (Plenderleith, 2018). Besides, around one billion of these population have access to mobile phones, which can serve as the foundation to provide various financial services such as balance inquiry, money transfer, payments, investment, insurance and credit facility. Indeed, many major banks have leveraged mobile devices as a principal medium for customers to access their accounts. They have created mobile apps and websites to provide their customers with an appropriate blend of comfort, convenience and user experience (Chawla and Joshi, 2017). Given the magnitude of competition, service providers are inclined to adopt online channels in an attempt to overcome the restriction related to human service encounters (Alalwan, Dwivedi, Rana and Simintiras, 2016a). In particular, the internet and the high penetration of smartphones, on the one hand, have prompted banks, software companies and microfinance institutions to provide these innovative services to extend their client reach and, on the other hand, enabled individuals to perform their financial activities cost-effectively regardless of time and place constraints.

Though the number of MFS users is increasing, they are considerably very low from embracing the phase of sustainable level and profit (Kim et al., 2018). The use of mobile devices or tablets to conduct financial activities is not as widespread as anticipated. As of 2018, only one-third of internet users worldwide have sent, received or stored money using their mobile devices (Best, 2021). This statistic indicates significant growth opportunities for service providers to deepen their customer base and seize greater market shares. Also, these circumstances demand a further investigation into how financial institutions, notably banks, can enhance the adoption of MFS.

Taking into consideration the inherent advantages of digital transactions in the banking sector and the dynamic nature of MFS adoption, this topic has gained significant attention from both practitioners and academicians. The literature documenting the inhibitors and antecedents of digital banking is relatively broad. Regardless of a growing body of literature on digital banking adoption, there have been seldom attempts to perform a systematic overview of existing studies and their research findings. Given the complex structure of mobile financial services as an integration of mobile and financial services, MFS as a research topic warrants an updated and comprehensive review to analyse the current state of knowledge. Such review provides an opportunity to step back and review the collective intelligence that has amassed from an often eclectic body of literature using different theories, methods and samples (Hanafizadeh, Keating, et al., 2014b). Accordingly, by systematically analysing available literature, this study intends to conduct a rigorous mapping of current knowledge based on four considerations. First, researchers have studied various digital banking adoption factors: few have reviewed studies based on mobile banking adoption (Shaikh and Karjaluoto, 2015) and mobile payment adoption (Dahlberg et al., 2015). But there is a lack of research that systematically reviews studies focused on every form of mobile financial services, that is, mobile banking, mobile payment and mobile money. Second, the findings of isolated studies are often contradicted by subsequent studies (Shaikh and Karjaluoto, 2015). In this regard, consolidating extant literature will provide a cumulative understanding and draw a big picture in mobile financial services research. Third, the accelerated growth of MFS research demands periodic reviews to keep researchers updated. The available reviews are published in 2021 or before, thus excluding any significant research contribution after 2019. Fourth, citation count is one of the most widely accepted measures to examine the significance of research studies (Peng and Zhou, 2006). To the best of the authors' knowledge, citation analysis of MFS adoption literature has not been conducted in any study. Fifth, by collating the current state of knowledge on MFS adoption, the present study contributes to the growing interest of scholars in this topic by listing the significant research gaps. This will allow academicians not to repeat previous work and stimulate research in other promising areas. Sixth, this study has examined the antecedents of MFS adoption from different angles that can impact consumers' decision process by categorizing them into six groups. The detailed analysis of specific factors will provide practical guidance to professionals in

making effective marketing strategies to speed up the adoption of mobile financial services. Based on the above rationale, the authors conducted a systematic literature review to comprehend the trend of MFS and probe the factors contributing to their adoption.

The rest of the paper is arranged in the following manner. The second section provides a brief overview of different forms of mobile financial services and their definition. The third section details the methodology providing the keywords searched, inclusion criteria applied and procedure of systematic review. The fourth section highlights the results of this paper, outlining the general characteristics of reviewed paper, theories and frameworks applied to explain MFS adoption, and citation analysis. The fifth section describes the antecedents, mediators, moderators and consequences of MFS adoption. Finally, this article concludes with research gaps in the literature and the future research agenda.

2 | MOBILE FINANCIAL SERVICES

Mobile financial services refer to the range of financial services that can be performed using mobile phones. Though the terms internet banking, digital finance, mobile financial services and mobile banking are often used as synonyms, there exists a minor difference among these terms. Digital finance is a broader term and includes online loans, mobile payment, mobile banking, mobile wallet, internet finance, internet insurance and other kinds of innovative products such as cryptocurrency and digital assets, which are facilitated using digital instruments and internet connection (Li et al., 2020; Alkhowaiter, 2020). Though MFS is a part of the digital finance domain, it includes only those services that can be assessed using mobile phones. MFS ecosystem comprises six major players to execute the delivery of financial services, viz., customers, banks, merchants, agents, mobile network operators and regulators (Kim et al., 2018). In recent years, MFS has emerged as the most promising front-end technology for broadening access to financial services (Gupta et al., 2017) and has the great potential to drive financial inclusion (Upadhyay and Jahanyan, 2016; Mothobi and Grzybowski, 2017; Humbani and Wiese, 2019). The typology of mobile financial services comprises three leading forms: mobile banking, mobile payments and mobile money (Firpo, 2009).

2.1 | Mobile banking

At the end of the 1990s, the German company Paybox developed the first mobile banking service in collaboration with Deutsche bank (Shaikh and Karjaluoto, 2015). Ever since many companies have entered the industry anticipating the potential of this technology to revolutionize the banking sector. Shaikh and Karjaluoto, (2015, p. 131) have defined mobile banking as "a product or service offered by a bank or a microfinance institute (bank-led model) or MNO (nonbank-led model) for conducting financial and nonfinancial transactions using a mobile device, namely a mobile phone, smartphone, or tablet."

Mobile banking offers additional channel to customers for performing their banking activities, such as balance inquiry, account transfer, mini statement, investments and insurance policy management. Individuals can avail of these services through different mediums, with the most preferable being mobile browsing, downloadable applications, short messaging services (SMS) and interactive voice response. Mobile banking, thus, offers excellent opportunities to banks to reach people and distant areas that are otherwise difficult and costly to approach (Ha et al., 2012).

2.2 Mobile payment

Dahlberg et al. (2015, p. 265) have defined mobile payments as "the payments for goods, services and bills with a mobile device by taking advantage of wireless and other communication technologies." The history of mobile payments dates back to 1997 when Coca-Cola came out with a vending machine, where individuals can pay with an SMS message. Mobile payments broadly fall into two categories: remote m-payments and proximity m-payments. Remote mobile payments involve making payments for mobile-related services such as ringtones or online purchases through SMS service or internet facility, similar to the e-commerce payment system. Proximity mobile payments, on the other hand, involve making payments at point-of-sale (POS) purchases such as vending, grocery items and tickets. In these cases, users scan a guick response (QR) code with their downloaded app or place their device close for reading by store Near Field Communication (NFC) device or Bluetooth low energy proximity sensing technology (de Kerviler et al., 2016).

2.3 Mobile money

As defined by Upadhyay and Jahanyan (2016, p. 39), "mobile money is a mobile-based money transfer service that uses information and communication technologies (ICTs) tools and nonbanking channels (mainly retail) to offer and extend the financial services to subscribers who are not profitable to be reached by formal and traditional financial services providers like banks." Mobile money services had existed since 2001 when Smart Communications deployed Smart Money in partnership with Banco de Oro (BDO) to overcome the issue of limited access to banking infrastructure (GSMA, 2012). Unlike mobile banking, where banks intermediate between the transactions, monetary activities in mobile money involve two parties where both of them are the users of the same mobile money service. Mobile money services facilitate person-to-merchant and person-to-person payments using mobile devices irrespective of bank accounts and expensive devices (Chauhan, 2015).

METHODOLOGY 3

This research adopts a systematic literature review (SLR), a literature review approach that aims to provide a rigorous analysis of current knowledge on the topic by collecting relevant articles from databases (Kim et al., 2018). The methodology involves an unbiased assessment to ensure that reviewed documents are towards the objectivity of the focus area, providing transparency and replicability by explicitly outlining every detail of each step performed during the review process (Jain et al., 2019). Indeed, in the field of international development, the SLR has been regarded as "the most reliable and comprehensive statement about what works", as the technique involves identifying, synthesizing and assessing all the available evidence to identify research gaps and future directions from a broader perspective (Kim et al., 2018; Mallett et al., 2012, p. 445).

We followed the SPAR-4-SLR protocol suggested by Paul et al. (2021) to conduct the literature review. The process involves three series of actions: (1) assembling: identification, execution; (2) arranging: organization, purification; and (3) assessing: evaluation and reporting.

3.1 Assembling

The first step of SLR is to identify and assess appropriate literature to ensure that articles included in the review are complete, represents the topic and of high quality. We accessed the Web of Science (WoS) database to locate the articles on mobile financial services adoption. Web of Science provides a multidisciplinary platform that enables easy access to literature across various disciplines such as management, technology, finance, psychology etc., and also facilitates the procurement of high quality and most recent studies. Additionally, WoS has been creating a complete and specific view of high-quality research which goes back to 1990 compared with other databases such as Scopus (Jain et al., 2019). To capture the concept of mobile financial services, a combination of keywords representing various financial services performed by mobile phone such as mobile banking, mobile payment, mobile money, money wallet, mobile financial services are looked for. The search was conducted on May 12, 2021 to extract all the relevant articles from the year 2000 to the year 2021 using the following Boolean:

TI = ((Adopt*) AND ((mobile financial services) OR (mobile banking) OR (mobile payment) OR (mobile money) OR (mobile wallet) OR (m-banking) OR (m-payment))).

3.2 Arranging

Next, we establish the following criteria to exclude the articles: papers not printed in the English language, articles not published in journals, and articles in which mobile financial services adoption is not treated as a major theme. Articles based on similar research themes such as internet banking, electronic banking, online banking and self-service banking technology are excluded from the analysis.

Articles, where adoption of mobile financial services, mobile banking, mobile payment, mobile money, mobile wallet, m-banking and m-payment are explicitly mentioned as the main subject of study are included for the review in this paper. Also, any conceptual and

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FIGURE 1 Procedure of systematic review

empirical academic articles published in peer-review journals, written in the English language and published before May 12, 2021, were acknowledged for further analysis. Following the benchmark used by Paul and Rosado-Serrano (2019), we filtered the articles based on their annual impact factor (at least 1) to ensure the quality of literature review.

The query generated 134 articles, out of which one was eliminated as it was not written in the English language. Further, 13 papers were rejected as they were not specifically focusing on the factors affecting mobile financial services adoption. As illustrated in the PRISMA diagram (Moher et al., 2009) (Figure 1), the process left us with 118 research papers that are considered for full-text review (Table A1).

Systematic literature reviews can be largely categorized as theory-based, domain-based and method-based; among them domain-based reviews are the frequently published reviews in both business-related and nonbusiness-related research streams (Paul and Criado, 2020). A domain-based SLR can be further classified into structured theme based review (Rosado-Serrano et al., 2018; Paul and Feliciano-Cestero, 2021), bibliometric reviews (Randhawa et al., 2016), framework-based review (Paul and Benito, 2018; Jebarajakirthy et al., 2021), conceptual reviews or reviews aiming for theory development (Paul, 2020), and hybrid narrative review (Paul et al., 2017).

For the purpose of this study, we followed the process of framework-based review on the rationale that these reviews are intended to demonstrate a more robust structure (Södergren, 2021). More precisely, the TCCM format proposed by Paul and Rosado-Serrano (2019) has been used as a organizing framework to synthesize the literature. This easy yet comprehensive framework is suitable to provide a rigorous analysis of current knowledge, to highlight research gaps, and to propose future research agenda in terms of (a) theories, (b) characteristics, (c) contexts and (d) methodology in

the context of MFS adoption. Following the guidelines of Paul and Rosado-Serrano (2019), Jebarajakirthy et al. (2021) and Lim et al. (2021), we developed the TCCM framework for this study as illustrated in Figure 2.

4 | FINDINGS

The list of 118 research papers was transferred to an Excel file created to incorporate each paper's year of publication, complete reference, sampling details, country context, antecedents and consequences of mobile financial services adoption, methodology used, citation counts and additional information. The report reveals that research papers were published on three key forms of mobile financial services with "mobile banking studies" accounts for 56 articles followed by 50 articles on "mobile payment", nine articles on "mobile money," and three articles on "mobile financial services". In the following segments, a general description of the studies to outline the crucial aspects of research in this area, followed by research gaps, is provided.

4.1 | Year of publication

As displayed in Figure 3, the research pertaining to mobile financial services has started appearing in journals in 2007, and the count has been gradually increasing ever since, although interrupted in 2013. The first article on mobile payment was published in 2007, mobile banking in 2009, mobile financial services in 2011, and mobile money in 2017, being the latest technology in the industry. Out of the 118 articles under analysis, the maximum number of articles was published in 2020 (22 papers), reflecting researchers' growing attention towards the topic.

4.2 | Country

In terms of geographical coverage (Figure 4), more than half of the studies (58.26%) were administered in the Asian region, 15.65% in Europe, 10.43% in Africa, 7.82% in North America, 0.86% in South America, 0.86% in Australia, 1.73% in other regions and five studies (4.34%) were conducted simultaneously in more than one country (comparative studies). The high number of studies in developing countries reflects the challenges individuals face from these regions while adopting new technologies such as mobile financial services (Souiden et al., 2021). Moreover, most of the Asian countries studied in reviewed articles are characterized as developing countries, facing a perennial issue of inadequate infrastructure and uneven network penetration (World Bank, 2018). These countries advocate very low utilization of mobile phones to handle banking transactions (2%percent in emerging Asia, 24% in developed Asia) (Chaouali and Hedhli, 2019), thereby attracting great scholarly interest to unravel the areas for successful adoption of mobile financial services. At the

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FIGURE 2 TCCM framework

country level, 34 countries were surveyed, and the most repeatedly studied countries are India (15), China (14), USA (8), Spain (5) and Malaysia (6). Among the nine articles on mobile money, five are focused on Africa, reflecting the success of M-Pesa in Kenya and its spillover effect over neighbouring countries which lack access to financial services.

4.3 | Journal

It can be observed from the Table 1 that articles on mobile financial services adoption were published in 50 different publication outlets. The journal that focused majorly on this phenomenon is the "International Journal of Bank Marketing" (20 articles), which indeed is an

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FIGURE 4 Distribution of studies among different regions

accurate platform for authors to present their research work on marketing issues concerning financial service providers worldwide. Further, the "International Journal of Mobile Communications" published nine articles, followed by the "Journal of Retailing and Consumer Services" (eight articles), "Computers in Human Behaviour" (seven articles), and the "International Journal of Information Management" (five articles). Interestingly, almost half (48.27%) of the studies are published in precisely seven journals. The rest of the articles are published across 43 journals (four journals with three publications each, 10 journals with two publications each and 29 journals with one publication each).

4.4 | Theories used

To explain the adoption phenomenon, scholars have relied upon various well-established models to understand the consumers' behaviour. In most circumstances, they have either used extensions, modification, or a combination of models to comprehend the adoption process better. In total, 41 different theories, frameworks and models have been used as a foundation to examine the concern (Table 2). The analysis

reveals that the "Technology acceptance model (TAM)" (Davis, 1989) is the most frequently used framework (35 studies) followed by the "Unified theory of acceptance and use of technology" (UTAUT/ UTAUT2) (Venkatesh et al., 2003; Venkatesh et al., 2012) employed by 22 studies, the "Innovation diffusion theory (IDT)" (Rogers, 2003) adopted by 14 articles, and the "Theory of planned behaviour (TPB)" (Ajzen, 1991) used in five articles to unravel the mobile financial services adoption. Notably, other behavioural frameworks were either studied exclusively or in association with other innovation models. For instance, Handarkho and Harjoseputro (2020) developed a theoretical model based on the "Push-Pull-Mooring (PPM)" framework to explain mobile payment adoption in an offline context; Hong (2019) integrated TAM, cascades theory, social cognitive theory and innovation diffusion theory to understand mobile banking adoption intention; Omigie et al. (2017) employed theory of consumption values to investigate customer pre-adoption choice behaviour to use mobile financial services. Contrarily, other researchers chose to evaluate and compare the attributes of different models (Kapoor et al., 2015; Giovanis, Athanasopoulou, et al., 2019b).

Further, it is observed that researchers had mainly confided in traditional theories to explain consumers' mobile financial services

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TABLE 1 Publication outlet

Journal	Total citations ^a (2011-2020)	Frequency	Percentage
International Journal of Bank Marketing	4269	20	16.94
International Journal of Mobile Communications	1772	9	7.62
Journal of Retailing and Consumer Services	14,281	8	6.77
Computers in Human Behaviour	82,170	7	5.93
International Journal of Information Management	20,404	5	4.23
Telematics and Informatics	11,845	4	3.39
Journal of Enterprise Information Management	3913	4	3.39
Information Systems Frontiers	6980	3	2.54
The Service Industries Journal	5572	3	2.54
International Journal of Retail & Distribution Management	4608	3	2.54
Information Development	1753	3	2.54
Journal of Organizational Computing and Electronic Commerce	1079	2	1.69
Journal of Business Research	50,119	2	1.69
Technological Forecasting & Social Change	33,231	2	1.69
Psychology & Marketing	6209	2	1.69
SAGE Open	5641	2	1.69
Technology in Society	3137	2	1.69
Journal of Computer Information Systems	2831	2	1.69
Journal of Electronic Commerce Research	1390	2	1.69
Journal of Global Information Management	865	2	1.69
Electronic Commerce Research and Applications	6755	2	1.69
Sustainability	108,830	1	0.85
Wireless Personal Communications	25,394	1	0.85
Applied Economics	11,742	1	0.85
Industrial Management & Data Systems	9999	1	0.85
Internet Research	6378	1	0.85
Mathematics	6325	1	0.85
Discrete Dynamics in Nature and Society	6074	1	0.85
IET Intelligent Transport Systems	5967	1	0.85
Behaviour & Information Technology	5488	1	0.85
International Journal of Human-Computer Interaction	5160	1	0.85
Technology Analysis & Strategic Management	4445	1	0.85
Journal of Strategic Information Systems	4394	1	0.85
Information Technology & People	2744	1	0.85
Women's Studies International Forum	2590	1	0.85
Journal of Hospitality and Tourism Management	2590	1	0.85
Electron Markets	2568	1	0.85
Frontiers in public health	2527	1	0.85
Information technology for development	1995	1	0.85
Information Systems and e-Business Management	1957	1	0.85
Service Business	1951	1	0.85
Review of Development Economics	1661	1	0.85
Information Technology and Management	1556	1	0.85
Journal of Hospitality and Tourism Technology	1546	1	0.85

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TABLE 1 (Continued)

Journal	Total citations ^a (2011–2020)	Frequency	Percentage
Human Factors and Ergonomics in Manufacturing	1444	1	0.85
Information Economics and Policy	1443	1	0.85
Data Technologies and Applications	1224	1	0.85
International Journal of Finance & Economics	1102	1	0.85
Canadian Journal of Administrative Sciences	923	1	0.85
Journal of Global Information Technology Management	649	1	0.85

Note: Grey coloured cells outline the top 10 highly cited journals.

^aTotal citations include the citation of all the articles in the journal to reflect the performance of the respective journal and its impact over the indicated period.

adoption before 2015 but switched to unconventional frameworks such as the theory of trying (Chaouali et al., 2017), behavioural reasoning theory (Gupta and Arora, 2017), consumption value theory (Omigie et al., 2017), protection motivation theory (Wang, 2020) and institutional theory (Abayomi et al., 2020) after this period. Additionally, some authors have applied self-developed frameworks (Koksal, 2016; Gupta et al., 2017; Park et al., 2019) consisting of numerous constructs.

4.5 | Methods used

Since 2007, three literature reviews have been published incorporating research from 2005 to 2014 (Shaikh and Karjaluoto, 2015), 2008 to 2011 (Ha et al., 2012) and 2005 to 2019 (Souiden et al., 2021). Around 96% of reviewed articles have utilized an empirical approach to investigate the adoption process, which is carried out using various qualitative and quantitative data collection methods such as survey instruments, interviews, triangulation and focus group discussions. Regarding data sources, authors in 111 articles have collected data directly from the main source, while only six (including three literature reviews) are based on secondary data.

When it comes to data analysis techniques, structure equation modelling (SEM) is the dominating tool used by authors (50 articles) to examine complex relationships among latent variables. However, partial least squares-SEM (PLS-SEM) has gained momentum in recent years with the increasingly demanding requirements of covariance-based SEM in respect of model complexity, sample size and distribution assumptions (Souiden et al., 2021). The PLS-SEM, a less restrictive approach, has been extensively used by authors (24 articles) as it facilitates the easy representation of higher-order constructs. Regression analyses have been used in 21 articles, while other studies have used a variety of analyses method such as neural networks (Khan and Ali, 2018), ANOVA (Esfahani and Bulent Ozturk, 2019; Karimi and Liu, 2020), t-test (Changchit et al., 2019), path analysis (Thakur and Srivastava, 2014; Mortimer et al., 2015), cluster analysis (Chawla and Joshi, 2017), logit binary (Mothobi and Grzybowski, 2017; Keramati et al., 2012) to name a few.

4.6 | Citation analysis

Citation analysis is one of the highly recognized measures to assess scholarly influences. Researchers cite the literature while creating the manuscripts to support their theory and acknowledge other scholars' contributions. Therefore, citation count provides an approximate idea of the significance of research studies (Peng and Zhou, 2006). Subsequently, the citation counts of the shortlisted 118 research articles are arranged in Microsoft excel to locate the highly referred articles, authors and journals.

4.6.1 | Highly cited articles

Table 3 lists the top 10 articles out of the 118 articles reviewed that have generated the highest citations as of 16 July 2021. The analysis has been performed using a title search on the "Google Scholar" database and tabulating the respective citation count. The article written by Zhou et al. (2010) records the maximum citation (1491), which integrates the TTF and UTAUT model to explain mobile banking adoption. The second most frequently cited article is Mallat (2007), cited 1149 times, a qualitative study that explores the consumer adoption of mobile payments using focus group interviews. The article by Lin (2011), with a citation count of 965, examines the effect of knowledge-based trust and innovation attributes on attitude and intention of potential and repeat users on adopting mobile banking. Since earlier studies ought to achieve more citations, apparently seven out of the top 10 articles are published before 2015. Also, seven out of the 10 articles deal with mobile banking, three with mobile payment and none with mobile money. This reflects the chronology of technology as they appear in the market, with mobile money being the latest innovation.

4.6.2 | Top cited journals

The concluding 118 articles are associated with 51 publication outlets. These 50 journals have been evaluated for citation analysis using "Elsevier's Scopus indexed SCImago Journal Ranking (SJR)" database.

TABLE 2 Conceptual frameworks and theories used in literature

Concentual frameworks/theories	Mobile	Mobile	Mobile	Mobile financial	Total
TAM or extended	10	o	2	1	22
	5	, Л	2	1	9
	2	3			5
	1	5			1
IDT + knowledge-based trust	1				1
UTAUT + TTF + ITM	1				1
IDT or extended	2	2			4
Cost-benefit perspective	1				1
Item response theory	1				1
GAM	1				1
Social psychology theory $+$ extended TAM $+$ IDT	1				1
Decomposed theory of planned behaviour $+\ trust\mbox{-related}$ behaviour	1				1
Theory of trying	1				1
TAM + TPB	1		1		2
IDT + UTAUT	1				1
TAM + UTAUT + TPB	1				1
Behavioural reasoning theory	1				1
Elaboration likelihood model (ELM)	1				1
TAM + TTF	1				1
TAM + TPB + DTPB + UTAUT	1				1
Contagion based model	1				1
Stimulus-organism-response (S-O-R) theory	1				1
ТРВ	1				1
$TAM + cascades\ theory + social\ cognitive\ theory + IDT$	1				1
TAM + IDT + DTPB	1				1
IDT + UTAUT2		2			2
Value based theory		1			1
TAM + TRA		2			2
Valence framework + TCE + ISS		1			1
TAM + UTAUT		1			1
Moore and Benbasat's Perceived Characteristics of Innovating theory + Tornatzky and Klein + IDT		1			1
IDT + TAM		1	1		2
ISS + TCE + IT continuance model		1			1
TOE		1			1
META UTAUT		1			1
Modified TRI + expectation-confirmation theory		1			1
Push-Pull-Mooring (PPM)		1			1
Mood-Behaviour Model and the Affect Infusion Model		1			1
Innovation Resistance Theory (IRT)		1			1
IDT and push-pull concept		1			1
I AM and prospect theory		1			1
Extended valence framework		1			1
Protection motivation theory		1			1
Consumption value theory				1	1

TABLE 3 Citation count of top 10 articles out of 118 reviewed

S. No.	Article reviewed	Citation count
1	Zhou et al. (2010)	1491
2	Mallat (2007)	1149
3	Lin (2011)	965
4	Yu (2012)	941
5	Shaikh and Karjaluoto (2015)	827
6	Oliveira et al. (2016)	695
7	Abdallah et al. (2017)	661
8	Yang et al. (2012)	646
9	Oliveira et al. (2014)	588
10	Hanafizadeh, Behboudi, et al. (2014a)	553

Source: Google Scholar.

The analysis has been executed for the past 10 years (2011–2020) owing to easy management, data availability and observing the recent trends. The Table 1 highlights the top 10 journals with the highest aggregated citation count. It is observed that *Sustainability* tops the list with the citation count of 1,08,830, an international multidisciplinary open-access journal covering cultural, economic, environmental and social sustainability of human beings. The list has been followed by *Computers in Human Behaviour* (82170), *Journal of Business Research* (50119), *Technological Forecasting & Social Change* (33231), Wireless Personal Communications (25394), *International Journal of Information Management* (20404) and so on. Notably, open-access journals draw more citations than those available only through subscription due to increased dissemination and easy access.

4.6.3 | Highly cited researchers

Table 4 outlines the 10 most frequently cited authors with respect to overall publication as well as in the field of mobile financial services adoption. The citation analysis has been performed with the help of researchers' citation count on ResearchGate and Google Scholar. The work of Gwo-Hshiung Tzeng has secured the highest citation with a remarkable count of 59,357 citations, followed by Aditya Shankar Mishra with 44,914 citation, Yogesh K. Dwivedi with 35,051 citations, T. Ramayah with 32,088 citations and H. Rghav Rao with 25,209 citations. Yogesh K. Dwivedi (with citation count of 35,051) has made prominent contribution to the area of MFS adoption which can be recognized by his contribution to the field. The articles by these authors indeed demonstrate some high-quality work and new approaches to deal with an issue.

4.7 | Variables

The adoption of technology is a complex phenomenon; hence, it required interactions among multiple variables to understand the entire process. A comprehensive review of articles reveals that researchers have employed several antecedents, moderators, mediators and consequences to investigate consumers' mobile financial service adoption and use.

4.7.1 | Consequences and mediators

The articles under review have mainly researched consumers' behavioural intention (used 68 times) and usage (22 times) aspects of mobile financial services. Other dependent variables include continuous usage (used five times), attitude (used two times), sustained usage (used two times), satisfaction (used one time), interaction (used one time), intention to recommend (used two times), adoption postponement (used one time) and renewed adoption (used one time). These constructs have been used both as a mediator and dependent variable in the literature depending on the context. For instance, attitude has been used as a mediator in 18 studies but as a dependent variable in only two research papers.

4.7.2 | Moderators

Regarding moderating variables, mainly demographic variables viz. age, gender, income, level of education and occupation have emerged from the literature. Mixed outcomes have been found regarding their impact between independent and dependent variables. Surprisingly, some articles did not show any effect (Makanyeza, 2017; Handarkho and Harjoseputro, 2020; Chaouali and Hedhli, 2019; Oliveira et al., 2014), while others indicate a significant relationship (Yu, 2012; Crabbe et al., 2009; Musa et al., 2015). Taking a different viewpoint, some researchers have investigated the moderating effect of social influence (Narteh et al., 2017), experience (Teo et al., 2015; Giovanis, Assimakopoulos, et al., 2019a), personality traits (Ha et al., 2020), perceived security concerns (Jebarajakirthy and Shankar, 2021), perceived risk (Wong et al., 2021) to explain the mobile financial services adoption mechanism.

4.7.3 | Antecedents

When it comes to the antecedents of mobile financial services adoption, the data extraction from the reviewed articles resulted in a large and heterogeneous set of variables. To facilitate the interpretation, the antecedents are classified into six different categories: Cognitive determinants, affective determinants, social-based determinants, trust-based determinants, barrier-based determinants and consumerbased determinants.

Cognitive determinants

The cognitive determinants reflect individuals' intellectual behaviour that deals with logic, thoughts and beliefs. These factors are mostly affiliated to one or more innovation acceptance models such as

TABLE 4Highly cited authors

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"diffusion of innovation theory (DOI)", "technology acceptance model (TAM)", "unified theory of acceptance and use of technology (UTAUT/UTAUT 2)", etc.

The two factors (perceived usefulness and perceived ease of use) from the technology acceptance model overtake the list by being the most extensively used concepts in the literature. Perceived usefulness, used 46 times, refers to the belief that using a particular system would enhance an individual's job performance (Davis, 1989). The variables analogous to perceived usefulness are relative advantage from DOI (Rogers, 2003), performance expectancy from UTAUT (Venkatesh et al., 2003), perceived benefit from valence framework (Peter and Tarpey, 1975), utilitarian value (Cocosila and Trabelsi, 2016), perceived functional benefit (Shareef et al., 2018) and functional coverage (Kang et al., 2012). Perceived ease of use (used 46 times) is defined as the

belief that using a particular system will be free of effort (Davis, 1989). The constructs that pertain to perceived ease of use include effort expectancy from UTAUT (Venkatesh et al., 2003) and complexity from DOI (Rogers, 2003).

Another crucial construct that emerged in the context of MFS adoption is facilitating conditions from UTAUT, which is described as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system (Venkatesh et al., 2003). The concept has been used 23 times and is similar to the construct compatibility from DOI (Rogers, 2003), perceived behavioural control from theory of planned behaviour (TPB) (Ajzen, 1991), grievance redressal (Patil et al., 2020), technology support and regulatory support (Glavee-geo et al., 2017). The next frequently used variable to explain MFS adoption is convenience (used 13 times), which can be defined as time and effort an individual commits to use a service or purchase a product (Copeland, 1923). The majority of the articles had theorized convenience as a unidimensional variable, but Jebarajakirthy and Shankar (2021) explored different dimensions of convenience, viz., access convenience, search convenience, evaluation convenience, transaction convenience, benefit convenience and postbenefit convenience, to explain the consumer behaviour.

The cost and pricing structure has a significant influence on consumers' technology use (Venkatesh et al., 2012). While the construct 'perceived cost' refers to the amount incurred to acquire a product/ service, 'perceived value' indicates a product's overall worth by comparing its perceived benefit with the perceived cost. The concept has been used 24 times and incorporates the term promotional offers (Wang and Dai, 2020), financial incentives (Zhao et al., 2019), deal proneness (Handarkho and Harjoseputro, 2020) and charges and fees (Kang et al., 2012).

The next category of cognitive dimensions comprises technological characteristics, which include constructs related to the attributes of mobile financial services. These variables are primarily used to explain the constructs perceived usefulness and perceived ease of use in the literature. For instance, Zhang and Mao (2020) discussed the influence of responsiveness, mobility and smartness of NFC mobile payments in shaping consumers' perception of the usefulness of this technology. Similarly, Kang et al. (2012) reported how good menu design, input and output device constraints, and readiness could influence the usability of m-banking services. Some authors have combined technology-based constructs with other factors to study MFS adoption, such as payment transaction information (Keramati et al., 2012), customization (Khan and Ali, 2018), multilingual option (Shareef et al., 2018) and efficiency (Chawla and Joshi, 2017).

Affective determinants

Aside from cognitive influence, individuals' feelings can also play a significant role in impacting their behaviour. Affective determinants outline factors related to individuals' emotions and sentiments. The concept of hedonic motivation from UTAUT 2 has been recognized to influence MFS adoption decisions strongly. It has been used six times in the reviewed articles and refers to the fun and pleasure derived by an individual from using a technology (Venkatesh et al., 2012). The constructs that capture the concept of hedonic motivation include perceived enjoyment (Yen and Wu, 2016; Koenig-lewis et al., 2015; Handarkho and Harjoseputro, 2020), positive emotion (Zhang and Mao, 2020) and enjoyment value (Cocosila and Trabelsi, 2016).

Social determinants

Social determinants outline the relevance of social context in influencing an individual's behaviour (Zhang and Mao, 2020). Social influence describes the extent to which individuals believe that people who are important to them think they should use the technology or not (Venkatesh et al., 2003). The construct derived its roots from subjective norms in TRA (Sheppard et al., 1988), the image in DOI (Rogers, 2003) and social factors in MPCU (Thompson et al., 1994). Researchers have used numerous constructs to characterize social influence such as social value (Cocosila and Trabelsi, 2016), social approval (Kapoor et al., 2015), social norm (Mehrad and Mohammadi, 2017), normative beliefs (Changchit et al., 2017; Changchit et al., 2019), perceived elitisation (Crabbe et al., 2009), interpersonal and external influence (Giovanis, Athanasopoulou, et al., 2019b). Drawing from social contagion theory, Chaouali and Hedhli (2019) argued that people adopt new technology either voluntarily through vicarious learning and positive reinforcement or involuntarily to follow the rules set by powerful entities. Accordingly, they studied the impact of three contagious influences of social pressure on m-banking adoption intention: mimetic pressure, normative pressure and coercive pressure.

Another critical concept in this backdrop is network externalities or critical mass, which can be understood as the total number of consumers who use a service or product increases, or the value that consumers feel increases when they perceive that there are more consumers (Gupta and Mela, 2008).The strength of this social influence can be determined by the perceived number of users, perceived number of peers and perceived availability of mass retailers who avail such services (Zhang and Mao, 2020). Also, it has been observed that retailers are more likely to adopt an innovation when they anticipate any competitive pressure from their rivals (Khan and Ali, 2018).

Trust-based determinants

The trust-based determinants include factors that influence the perception of an individual in the credibility of others. The variable 'trust' holds a significant role in mobile financial services research due to the uncertainties involved with the services. The construct has been used 23 times in the literature and is closely related to the constructs of perceived credibility (Tran and Corner, 2016; Bhatiasevi, 2016), trust belief (Lu et al., 2015), perceived privacy and perceived security (Mombeuil, 2020; Baabdullah et al., 2019; Changchit et al., 2017). Researchers have validated three dimensions to measure trust/initial trust in an online environment: integrity (trustee truthfulness and obligation fulfilling), competence (trustees' ability to complete trustor's need) and benevolence (trustees' tendency to act in good faith) (Lin, 2011; Gao and Waechter, 2017; Talwar et al., 2020).

In their study on mobile banking adoption, Chaouali and Hedhli (2019) studied the trust transfer mechanism, which can be inferred as

the transfer of trust from a mature channel to a newly emerged channel. As a result, they suggested a significant positive impact of both factors "trust in ATM" and "trust in online banking" on "trust in mobile banking". Another concept relevant to the trust factor includes structural assurance, which refers to the availability of suitable legal and technological structures to assure transaction confidentiality (Oliveira et al., 2014; Xin et al., 2015). In addition, consumers' calculative assessment of the costs and benefits of misconduct by a business entity (Pu et al., 2020) and a firm's reputation for delivering the services effectively (Oliveira et al., 2014) can build confidence among consumers for future transactions

Barrier-related determinants

Barrier-related determinants include factors that have impeded the successful adoption of mobile financial services. Perceived risk (used 37 times) refers to the possibility of uncertain events while using mobile financial services. Cocosila and Trabelsi (2016) proposed risk as a second-order construct encompassing four dimensions: time risk, social risk, psychological risk and privacy risk, while Thakur and Srivastava (2014) explained it through monetary risk, privacy risk and security risk. On a similar line, innovation resistance theory classified barriers into two categories: functional barriers (risk, value and usage barrier) and psychological barriers (tradition and image barrier) (Laukkanen, 2016; Khanra et al., 2021).

Studies have mentioned several arguments that dissuade people to switch to mobile financial services, which includes anxiety of using new technology (Shen et al., 2010; Bailey et al., 2017; Patil et al., 2020), operational constraints (Pal et al., 2020), connectivity (Upadhyay and Chattopadhyay, 2015), uncertainties and concerns related to incomplete transactions, unauthorized access to sensitive information and dubious outcomes due to absence of direct personnel (Gao and Waechter, 2017; Shareef et al., 2018; Talwar et al., 2020). Further, Parasuraman (2000) and Humbani and Wiese (2019) have reported that insecurity and discomfort associated with technology could slow down its adoption.

Other determinants

These determinants indicate individual-based factors and include demographic attributes, personality traits, emotions, culture and attitudes of consumers that are significant in the context of mobile financial services (Souiden et al., 2021).

Each individual has their own set of characteristics that distinguish them from others in terms of feelings, actions and thoughts. Agyei et al. (2020) have studied such traits referred to as the "Five-Factor Model" that theoretically captures the requisites of one's personality, including extraversion, agreeableness, neuroticism, conscientiousness and openness to new experience. Other attributes predicted to have a positive impact on MFS adoption include general self-confidence (Chaouali et al., 2017), the propensity to trust (Oliveira et al., 2014; Lu et al., 2015), openness to change (Gupta and Arora, 2017), optimism (Humbani and Wiese, 2019), personal innovativeness (Malaguias et al., 2018; Giovanis, Assimakopoulos, et al., 2019a), residency and travel behaviour (Keramati et al., 2012), cynicism (Chaouali et al., 2017) and resistance to change (Elhajjar and Ouaida, 2020).

Self-efficacy, used 13 times, refers to an individual's judgement regarding their capability to operate, interact and transact in mobile financial services (Shareef et al., 2018). The constructs that capture the same concept are absorptive capacity (Upadhyay and Chattopadhyay, 2015) and perceived ability to use (Shareef et al., 2018). Moreover, people with higher experience (Changchit et al., 2017; Pu et al., 2020), digital literacy (Elhajjar and Ouaida, 2020), mobile skillfulness (Liébana-Cabanillas et al., 2020) and technology competency (Changchit et al., 2017; Khan and Ali, 2018; Changchit et al., 2018) have greater possibilities to use mobile financial services.

Regarding demographic characteristics, while some researchers have used these variables as moderators, others have acknowledged their significance as the antecedents of MFS adoption (Laukkanen, 2016; Teo et al., 2012). Furthermore, we find that habit is used six times, an additional construct introduced by Venkatesh et al. (2012) in their UTAUT2 theory.

Apart from these, there are some theory-specific antecedents that have been used seldom in the literature. These include the "tasktechnology fit model" (Zhou et al., 2010; Oliveira et al., 2014; Baabdullah et al., 2019), "elaboration likelihood model" (Shankar et al., 2020), the concept of mindfulness (Flavian et al., 2020), "moodbehaviour model and the affect infusion model" (Karimi and Liu, 2020), and "the prospect theory" (Wong et al., 2021).

The studies in the extant literature have used these antecedents in different combinations to understand the individuals' adoption intention of mobile financial services. A robust model should incorporate different aspects of the decision-making process that can impact consumers' opinion towards the technology such as innovation characteristics, consumers' characteristics, social influence, trust-based factors, risk-based factors and so on. The rationale behind classification of these antecedents into different categories is to avoid overlapping of constructs as well as to facilitate researchers and practitioners by providing an exhaustive list of antecedents while determining consumers' MFS adoption process.

Based on their significance in deriving consumers' perception, some constructs are witnessed to be used frequently by the authors in their research. Noted among them are perceived usefulness, performance expectancy, relative advantage, perceived ease of use, effort expectancy, social influence, facilitating conditions, compatibility, trust, perceived risk, perceived cost, security, convenience and subjective norm. In a nutshell, all the constructs of the UTAUT model in addition to trust and risk are significant in explaining consumers' adoption of mobile financial services.

5 | RESEARCH GAPS AND FUTURE AGENDA

A comprehensive assessment of extant literature on the adoption of MFS unveils certain areas that lack critical examination and demand scholarly attention. The systematic review indicates fragmented research dominated by certain theoretical frameworks and analysis techniques with comparatively small sample sizes (mean number of

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respondents = 456). Therefore, the authors outline various research avenues that require researchers' concern to stimulate further research on mobile financial services.

- First, research has been conducted on different technologies of mobile financial services, that is, mobile payment, mobile banking and mobile money, with minimum emphasis on their specific characteristics, functionalities and issues. Consumers are intended to adopt a technology if its designs and features align with their needs, preferences, experiences and social environment. Therefore, research should be conducted on specific mobile financial services focusing on service-related factors and their impact on the actual usage of the innovation. Further, studies can be performed to analyse the impact of adoption and diffusion of one technology on the other, or scholars can compare the innovation-specific factors influencing consumer behaviour.
- Second, the majority of studies have utilized convenience sampling approach to collect the data (Al-iabri and Sohail, 2012; Alalwan et al., 2016a; Teo et al., 2012; Teo et al., 2015; Yen and Wu, 2016; Koenig-lewis et al., 2015; Bhatiasevi, 2016; Farah et al., 2018; Hussain et al., 2019), which can reduce the generalizability of the results for the whole population (Alkhowaiter, 2020). Moreover, studies have primarily analysed young and educated consumers (Chin et al., 2020; Talwar et al., 2020; Abayomi et al., 2020; Chen et al., 2020; Pal et al., 2020; Zhang and Mao, 2020), which illustrates every different behaviour from rest of the population. Also, very few papers focus on merchants' perspectives to adopt mobile financial services (Liébana-Cabanillas and Lara-Rubio, 2017; Nawaz and Ahsan, 2018; Moghavvemi et al., 2021). Accordingly, future research should employ other sampling techniques, examine respondents with different age groups and education qualifications, and incorporate merchants, bank staff and corporates as their targeted samples.
- Third, this literature review witnessed the supremacy of a few theoretical models (TAM, UTAUT and IDT) and determinants (perceived ease of use, perceived usefulness, compatibility, perceived risk, trust, social influence and facilitating condition) in explaining consumers' behaviour towards mobile financial services. Such dominance brings inevitable boredom and locks the door to the emergence of other theories that can enrich the discipline (Souiden et al., 2021, p. 233). However, recent years noticed a gradual shift beyond these traditional models as authors have started testing new theories to understand the adoption phenomenon viz., stimulus-organism-response theory (Jebarajakirthy and Shankar, 2021), innovation resistance theory (Khanra et al., 2021), contagion-based model (Chaouali and Hedhli, 2019), GAM (Shareef et al., 2018) and value-based approach (de Kerviler et al., 2016). These concepts can serve as an exciting avenue for future studies to build conceptual models as per different research contexts.
- Fourth, most of the articles have examined various facets of firsttime adoption, that is, behaviour intention and adoption, but only a handful of scholars have concentrated on continuous usage (Yen

and Wu, 2016; Baabdullah et al., 2019; Humbani and Wiese, 2019; Talwar et al., 2020; Pal et al., 2020), satisfaction (Humbani and Wiese, 2019; Singh et al., 2020), sustained usage (Crabbe et al., 2009; Kang et al., 2012) and adoption postponement (Khanra et al., 2021). Therefore, understanding postadoption behaviour is highly recommended for future research.

- Fifth, very few studies in the literature have been engaged in qualitative research, with Mallat (2007), Choudrie et al. (2018), and Moghavvemi et al. (2021) making an exception. Future research is encouraged to employ qualitative techniques such as interviews, ethnographic research and focus groups to gain personal insights into consumers' perspectives towards MFS. These observations can emerge into new theories, which could later be tested by collecting empirical data to interpret adoption patterns among different consumers.
- Sixth, studies examining MFS adoption for the bottom of the pyramid (BoP) segment are scarce and less representative in the literature (Hussain et al., 2019). This crucial section of the low-income community, which demonstrates a high level of illiteracy, limited access to formal financial services, and shortage of funds, can be a promising area of research. This segment encompasses a large section of society, thus providing a massive opportunity for marketers and service providers to broaden their customer base.
- Seventh, another issue we came across in this SLR is that authors have hardly been engaged in comparative and longitudinal studies. Cross-country studies can help provide a deeper understanding of national differences in terms of values, beliefs, cultures, development level and social norms. The knowledge gained from these studies will benefit marketers globally since people's perceptions are largely shaped by their cultural beliefs and social environment. Regarding longitudinal studies, Malaquias et al. (2018) made an exception. Their sample contains observations from three different periods and found a significant effect of time on the adoption of mobile banking. Such results indicate mobile financial services as an emerging technology and, therefore, necessitates further exploration. This approach is supposed to provide insights into some of the dynamic mechanisms that may occur within the research setting (Glavee-geo et al., 2017).
- Eighth, the majority of studies have examined the mobile finnacial services adoption and behavioural intention; very few articles have focused on other consequences such as satisfaction, continued usage, adoption postponement, renewed adoption etc.

6 | CONCLUSION

The area of mobile financial services is gaining worldwide attention, witnessing an increasing number of scientific and nonscientific articles. Although, the literature on MFS adoption has been reviewed in the past but existing reviews did not focused on every form of mobile financial services, that is, mobile banking, mobile payment and mobile money. Accordingly, this study highlights the scholarly contribution by synthesizing extant literature on MFS adoption. To do so, we have

conducted a systematic literature review on 118 articles published in Web of Science database.

It was observed that the research pertaining to mobile financial services has started appearing in journals from the year 2007 and the count has been gradually increasing ever since. Besides, the publication outlets, the most commonly used theories and frameworks, countries, statistical tools applied in the articles were listed to outline the context and characteristics of MFS adoption studies. Further, a comprehensive list of antecedents, moderators, mediators and consequences employed by researchers to examine MFS adoption is provided. With respect to the antecedents, the literature brings out a myriad of factors that have been used frequently in the studies. To facilitate the interpretation, the antecedents have been classified into six different categories: Cognitive determinants, affective determinants, social-based determinants, trust-based determinants, barrierbased determinants and consumer-based determinants.

Research in the field of mobile financial service has witnessed significant growth and added richness to this field, yet certain gaps still exist in the area. Accordingly, we charted out some promising directions for future research, which may substantially contribute to the development of this field.

ACKNOWLEDGEMENT

We are grateful to Guru Gobind Singh Indraprastha University for providing us with the infrastructure and opportunity to conduct our study.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available in web of science at https://www.webofscience.com/wos/woscc/advancedsearch. These data were derived from the following resources available in the public domain: web of science, https://www. webofscience.com/wos/woscc/advanced-search

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How to cite this article: Gupta, S., & Dhingra, S. (2022). Past, present and future of mobile financial services: A critique, review and future agenda. *International Journal of Consumer Studies*, *46*(6), 2104–2127. <u>https://doi.org/10.1111/ijcs.</u> 12855

Mobile financial services literature TABLE A1

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TABLI	A1 Mobile financial services	iterature		, 6, Dow
S. No.	Author	Country	Data source	Analysis technique
Mobil	e banking	Chana	271 respondents having used some kind of	Dogracion
T	Clabbe et al. (2009)	Glialia	banking and/or electronic banking services	Regression
2	Yang (2009)	Taiwan	Systematic sampling of 178 students	Rasch measurement model and WINSTEPS
3	Shen et al. (2010)	Taiwan	400 working class people	SEM
4	Tan et al. (<mark>2010</mark>)	Malaysia	184 bank customers	Regression
5	Zhou et al. (2010)	China	250 respondents that had accessed banks' mobile sites and used mobile banking services	SEM
6	Lin (2011)	Taiwan	368 participants (177 potential customers and 191 repeat customers)	SEM SEM
7	Al-jabri and Sohail (2012)	Saudi Arabia	330 mobile banking users and 136 potential users.	Regression
8	Zhou (2012)	China	200 respondents from two service halls of China	SEM Wite
9	Teo et al. (2012)	Malaysia	193 individuals who owned a mobile phone and also a bank account holder	Multiple regression
10	Ha et al. (2012)		23 research papers from he Emerald, ScienceDirect, EBSCO, and JSTOR databases published between 2008 and 2011.	Literature review (12/11/2022)
11	Kang et al. (2012)	South Korea	178 banking users from the first batch of data and 192 banking users from the second batch	PLS See the Terms a
12	Yu (2012)	Taiwan	441 respondents by shopping mall intercept method	PLS Conditio
13	Oliveira et al. (2014)	Portugal	194 respondent who is familiar with mBanking concept.	PLS https://or
14	Hanafizadeh, Behboudi, et al. (2014)	Iran	361 students who have cell-phones that are capable of installing m-banking software	SEM
15	Shaikh and Karjaluoto (2015)		Science Direct, Emerald, IEEE, Inderscience, Taylor & Francis, ACM, Wiley	Literature review
16	Mortimer et al., (2015)	Thailand, Australia	348 respondents having prior knowledge with m-banking, Thailand (175) and Australia (173)	Path analysis
17	Lu et al. (2015)	Taiwan	42 experts	Multiple attribute decision making (MADM) model
18	Yu (2015)	Taiwan	613 respondents using shopping mall intercept method	Cluster analysis and PLS
19	Liébana-Cabanillas et al. (2014)	Spain	Convenience sampling of 2012 internet users	SEM gray to
20	Koksal (2016)	Lebanon	776 respondents currently using or aware of online banking facilities	Binary logistic regression
21	Laukkanen (2016)	Finland	1089 mobile banking nonusers, and 428 users of mobile banking	Logistic regression
22	Alalwan, Dwivedi, Rana and Williams (2016b)	Jordon	343 Jordanian banking customers.	SEM
23	Tran and Corner (2016)	New Zealand	Two focus group with 12 postgraduate students having experience of mobile phones (at least 3 years) and atleast one bank account 183 who had at least one mobile phone and one bank account	Focus group discussion and PLS

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Shankar et al. (2020)

Ho et al. (2020)

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TABL	EA1 (Continued)			
S. No.	Author	Country	Data source	Analysis technique
24	Kishore and Sequeira (2016)	India	Mixed sampling technique to reach 959 samples.	Regression
25	Bhatiasevi (2016)	Thailand	272 mobile banking users	SEM
26	Chaouali et al. (2017)	Tunisia	557 having atleast 18 years of age, having at least one bank account and, nonusers of mobile banking	PLS
27	Abdallah et al. (2017)	Jordon	343 Jordanian banking customers	SEM
28	Glavee-geo et al. (2017)	Pakistan	Purposeful sampling of 189 respondents	PLS
29	Mehrad and Mohammadi (2017)	Iran	384 internet users	SEM
30	Makanyeza (2017)	Zimbabwe	Random interception of 232 customers as they walked out of five major banks	SEM
31	Gupta and Arora (2017)	India	379 customers having a saving bank account either with a public or a private sector bank in Jammu (India).	SEM and interviews
32	Gupta et al. (2017)	India	snowball sampling of 176 responses (metropolitan-70; urban-106).	SEM
33	Chawla and Joshi (2017)	India	Web survey of 367 mobile phone users in India	Cluster analysis
34	Changchit et al. (2017)	U.S.	309 mobile banking customers	Regression
35	Mullan et al. (2017)	U.K.	72 members from six stakeholder industries	Delphi technique
36	Farah et al. (2018)	Pakistan	385 banking customers	SEM
37	Choudrie et al. (2018)	U.K.		Qualitative
38	Shareef et al., (2018)	Bangladesh	201 Respondents who have experience of using mobile banking services in all the three stages	Path analysis
39	Changchit et al. (2018)	U.S. and Thailand	309 and 253 mobile banking customers in US and Thailand, respectively.	Regression
40	Malaquias et al. (2018)	Brazil	1033 respondents in three different time period	Regression
41	Hong (2019)	South Korea	Both offline and online survey of 751 present users of mobile banking services.	SEM
42	Changchit et al. (2019)	U.S. and Thailand	355 (U.S.), 400 (Thailand)	t-test
43	Giovanis, Assimakopoulos, et al. (2019a)	Greece	513 potential customers	PLS
44	Baabdullah et al. (2019)	Saudi Arabia	320 actual users of m-banking	SEM
45	Siyal et al. (2019)	Pakistan	200 respondents including both users and nonusers of m-banking having both a bank account and mobile phone	SEM
46	Giovanis, Athanasopoulou, et al. (2019b)	Greece	931 potential users by mall intercept procedure	SEM
47	Hamidi and Safareyeh (2019)	Iran	243 bank customers and the staff	SEM
48	Chaouali and Hedhli (2019)	France	1250 nonusers of mobile banking	PLS
49	Elhajjar and Ouaida (2020)	Lebanon	Convenience sampling method of 320 adults residing in Lebanon who possess private	SEM

bank accounts.

as offline mode

1153 Indian users of social networking

a paper-based survey and Vietnam (N = 213) by a web-based survey

websites collected through online as well

Data was collected from Taiwan (N = 164) by

SEM

SEM

India

Taiwan and

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TABLE A1 (Continued)

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No.	Author	Country	Data source	Analysis technique
52	Zhu et al. (2020)	China	10 banks	DEMATEL-ANP
53	Fall et al. (2020)	Senegal	A household survey in the suburbs of Dakar in 2012 by CRES8	Regression
54	Agyei et al. (2020)	Ghana	Convenience sampling of 482 customers having experience with MB service	SEM
55	Jebarajakirthy and Shankar (2021)	India	Systematic sampling of 446 banking users	SEM
56	Souiden et al. (2021)		76 manuscripts from Web of Science, ABI/INFORM global, and Business Source Premier	Systematic literature review
Mobile	payment			
57	Mallat (2007)	Finland	46 respondents having previous experience of using mobile phones	Focus group discussions
58	Zhou (2011)	China	277 respondents from service halls of China	SEM
59	Keramati et al. (2012)	Iran	623 judgement sampling of respondents	Logit regression
60	Yang et al. (2012)	China	483 potential adopters and 156 current and 483 potential users of mobile payment	SEM
61	Thakur and Srivastava (2014)	India	774 mobile phone and current banking customers	Path analysis
62	Liébana-Cabanillas et al. (2014)	Spain	2012 internet users	SEM
63	Slade et al. (2015)	United Kingdom	Snowball sampling of 268 nonusers	SEM
64	Musa et al. (2015)	Qatar	169 students, employees and academics	Regression
65	Xin et al. (2015)	New Zealand	302 potential users of mobile payment	PLS
66	Teo et al. (2015)	Malaysia	Convenience sampling of 319 users of mobile payment	PLS
67	Koenig-lewis et al. (2015)	France	Convenience sampling of 316 respondents	SEM
68	Kapoor et al. (2015)	India	323 citizens including both the adopters or nonadopters of IMPS	Regression
69	Upadhyay and Chattopadhyay (2015)	India	184 respondents have been using cell phone for not <2 years	Growing Hierarchical Self-Organizing Map
70	de Kerviler et al. (2016)	France	184 constituted the p-m-payment group and 79 represented in-store m infosearch group	t test, CFA and regression
71	Oliveira et al. (2016)	Portugal	301 students and alumni	PLS
72	Cocosila and Trabelsi (2016)	Canada	289 participants to be at least 18 years old, smartphone owners, and credit card users	PLS
73	Liébana-Cabanillas and Lara- Rubio (2017)	Spain	151 merchants	Neural network and Logit regression
74	Bailey et al. (2017)	U.S.	240 students through online survey	SEM
75	Gao and Waechter (2017)	Australia	851 respondents	PLS
76	Johnson et al. (2018)	U.S.	270 responses utilizing crowdsourcing through (M-turk)	PLS
77	Su et al. (<mark>2018</mark>)	China	922 randomly selected mobile users	Regression
78	Khan and Ali (2018)	China	188 Owners or managers of different types of retail stores	SEM and neural-network analysis
79	Zhao et al. (2019)	U.S.	463 respondents had no prior experience with using NFC mobile payment	SEM
80	Esfahani and Bulent Ozturk (2019)	U.S.	410 respondents through Amazon's Mechanical Turk	ANOVA
81	Liu et al. (2019)	China	230 users who know about or have used mobile payments.	PLS
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TABLE A1 (Continued)

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NO.	Author	Country		
82	Chan and Teans (2019)	Spain	287 (SMS), 287 (NFC), 188 (QR)	
0.4	Criefi and Tsang (2019)		457 potontial m payment users	
04	Park et al. (2019)	U.S.	457 potential m-payment users	
86	Humbani and Wiese (2019)	South Africa	convenience compliant of 426 respondents	SEM
00		Judio	convenience sampling of 420 respondents	
07	Chip at al. (2020)		224 ctudents	
00		U.S.	234 students	PL3 SEM
07		0.5. and Spann	and 414 from the USA)	SEM
90	Pu et al. (<mark>2020</mark>)	China	165 nonusers of Apple Pay	PLS
91	Al-Saedi et al. (2020)	Oman	436 M-payment users	PLS
92	Wang (2020)	Taiwan	convenience sampling of 418 debit/credit card user	SEM
93	Patil et al. (2020)	India	convenience sampling of 491 respondents	SEM
94	Handarkho and Harjoseputro (2020)	Indonesia	449 respondents	SEM
95	Pal et al. (2020)	India	Snowball sampling of 298 students who were using mobile payment apps	PLS
96	Karimi and Liu (2020)	U.K.	170 male and 152 female UK participants, who had never used in-store m-payment	Scenario-based experiment and ANOVA
97	Lin et al. (2020)	Taiwan	snowball sampling of 342 people.	PLS
98	Chen et al. (2020)	China	215 undergraduate students	Experimentation and PLS
99	Zhang and Mao (2020)	U.S.	394 adult nonusers of NFC mobile payments	SEM
100	Liébana-Cabanillas et al. (2020)	Spain	Snowball sampling of 539 respondents	SEM
101	Wang and Dai (2020)	China	433 respondents	SEM
102	Moorthy et al. (2020)	Malaysia	Judgemental sampling of 225 adults	Regression
103	Khanra et al. (2021)	India	Online survey of 308 paytm users	SEM
104	Cao (2021)	China	180 respondents	Path analysis
105	Moghavvemi et al. (2021)	Malaysia	purposive sampling of small, medium and large retail merchants	Interview
106	Wong et al. (2021)	China	419 elderly consumers who are current users	SEM
Mobil	e money			
107	Mothobi and Grzybowski (2017)	Sub-saharan Africa	Combined data from survey conducted by Research ICT Africa in 2011 and NOAA/ NGDC	Logit regression
108	Narteh et al. (2017)	Ghana	Random sampling of 300 MTN subscribers	PLS
109	Ramayah et al. (2017)	Malaysia	200 users of mobile money	PLS
110	Gichuki and Mulu-mutuku (2018)	Kenya	392 women micro-entrepreneurs using multistage sampling	Double hurdle model-probit and tobit model
111	Kiconco et al. (2018)	Uganda	208 respondents by multistage sampling procedure.	Regression and Mokken scaling
112	Afawubo et al. (2019)	South Africa	national survey carried out in 2016 by INSEED-Togo in collaboration with FinMark Trust	Ordered logit and sequential logit models
113	Chawla and Joshi (2019)	India	Two focus groups: working executives and students744 respondents who were aware of mobile wallets.	SEM and focus group discussions
114	Mombeuil (2020)	China	purposive sampling 0f 252 respondents who were foreign users from Africa	Hierarchical ordinary least squares (OLS) regression

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TABLE A1 (Continued)

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TABLE	A1 (Continued)			2022. 6. Dov
S. No.	Author	Country	Data source	Analysis technique
115	Singh et al. (2020)	India	206 respondents	SEM
Mobile	e financial services	maid		the second s
116	Hsu et al. (2011)	Taiwan	275 experienced MFS users.	SEM
117	Yen and Wu (2016)	Taiwan	368 users of MFS having at least 6 months experience	SEM View of
118	Omigie et al. (2017)	Kenya	Online survey of 384 registered M-Pesa users.	PLS evilation
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