




New trends in mobile payment technology: A Systematic Literature Search

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Abstract- In the last years, advances in technology have facilitated and generated confidence in the use of the mobile phone as a means of payment in new business environments to the extent that anyone uses it and it becomes a first requirement. necessity to carry out business and financial commercial activities. The incremental use of mobile payment makes it necessary to know factors that influence people in the decision to use the cell phone as a means of payment. To determine the various influencing factors or inhibitors that are behind the adoption of the technology and use of the mobile payment, an analysis of the literature was carried out, revealing performance expectations, perceived usefulness, significant determining factors in the intention to use mobile phones as a means of payment motivated by ease of use. However, it was found that security in open connectivity service platforms is an important inhibitor in the use of mobile phones as a payment technology.

Keywords: Mobile Phone, Mobile Payment Technology Trends, UTAUT2, TAM, Systematic Bibliographic Search.

I. INTRODUCTION

In recent years, the use of mobile payment systems has become drivers of socioeconomic development and economic growth in developing countries. Users not only carry out payment transactions but are also an important factor in the commercial development that is currently taking place in the world. Improvements in information and communication technologies (ICT) have caused changes in the way payment transactions are carried out in organizations. With current technological advances, the knowledge economy and digital culture, new forms of digital payment are emerging. [1]

Using Smartphones by users is part of their daily routine. Therefore, it becomes a means to carry out all types of commercial, economic, and financial transactions. Therefore, mobile payment presents characteristics of trust,

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security, availability, service integration, ease of use and reliability in any of the activities that the user requires and needs to use mobile payment [2].

Currently, every commercial initiative is forced to implement mobile payment methods. Although mobile payment systems must compete with a variety of alternative methods with a long history, such as plastic money. Given the aforementioned background, there is no doubt that mobile payments have the potential to provide commercial inclusion, especially in emerging markets that offer services and products to the masses that improve their lives. The trend towards the use of mobile payment is increasingly widespread as demonstrated by this literature analysis.[3]

To have a better understanding of the use of mobile payment and the influence of factors that motivate its use, especially the payment factor, it is necessary to review the literature to obtain more information about the success of the use of mobile phones as a means of payment that today it is a necessity in human lifestyles [4]. This is where the research question arises: “What is the new mobile technology trend to facilitate the use of mobile payment?” Advances in technology present an opportunity in the commercialization of products and services, thus facilitating payment for the solution of user needs [5].

To contribute to this area, an extensive systematic literature review (SLR) was carried out on existing research work on the use of mobile payment facilitated by Smartphone technology. Therefore, the main objective is to present the results of the research that was carried out so that researchers interested in the topic can have a broader overview to answer the questions asked about new mobile payment trends [6].

The rest of this document is structured as follows:

Section 2 Theoretical foundations of basic concepts related to mobile payment technology.

Section 3 Literature review.

Section 4 Methodology applied to carry out this SLR.

Section 5 Results of the review and discussion of the results.

Section 6 presents the conclusion of this article. [7]

II. THEORETICAL FUNDAMENT

A. Mobile payment services

Mobile payment services being created today and through continuous improvement play important roles in creating ecosystems ranging from regulators, financial institutions, device manufacturers, retailers to the customer themselves.[8]

B. Proximity Payment

Proximity payment refers to payment through users' mobile phones on the spot, for example, paying for public transportation tickets and paying bills, etc. [9] Users can free themselves from space limitations caused by traditional methods. It can be classified into remote payment and proximity payment states that remote payment requires users to connect to remote payment servers to make the payment. Proximity payment refers to payment through users' mobile phones on the spot, for example, paying for public transportation tickets and paying bills, etc. [10] The main advantage of mobile payment is the ease of making payment for a commercial transaction from your smartphones, compared to traditional (i.e. offline) payment modes.[11]

C. Adoption and use of mobile payments

Mobile payments literature mentions technology adoption models.[10]and less attention to the actions and mechanisms that lead to the achievement of objectives[eleven]. While it is true that the unified theory of technology acceptance resolves some of the deficiencies with the inclusion of a wide range of variables, Bailey, 2022, mentions that there is the difficulty of grouping the predictors for its variety of connotations. However, technology adoption in underdeveloped countries often use other innovative technologies.[2]. For this reason, different authors adopt a different theoretical position considering those who expose the properties of technologies as the possibilities of action they offer to achieve the desired objective.[12].

D. Mobile payment

Mobile devices can be used for payment (as mobile payment) using micro payment methods that must be supported by an authentication system to ensure the security and convenience of each transaction. There are several advantages of using the mobile payment method, which is an independent payment, easy to access from anywhere and you can avoid the possibility of long lines for cash payments. In addition to the benefits, there are several factors that may impede the use of mobile payment methods, such as payment system premium pricing, perceived security risks, incompatibility with large payments, and mobile payment immunity. Mobile payment services being created today and through continuous improvement play important roles in

creating ecosystems ranging from regulators, financial institutions, device manufacturers, retailers to the customer themselves.[12]

III. LITERATURE REVIEW

The Literature Review (SRL) helps us identify, evaluate, and interpret available research relevant to a particular research question, topic area, or phenomenon of interest. Santos Rocha [7] tells us that the individual studies that contribute to an SLR are called primary studies; An SLR is a form of secondary study. An SLR differs from traditional reviews (such as simple literature reviews) and surveys with feedback from experts in the field because it uses a replicable, scientific, and transparent approach to avoid bias.[13] To carry out this SLR, the guidelines proposed by Kitchenham [14] are followed. According to these guidelines, an SLR must be considered steps that can be grouped into three main phases:



The systematic literature review research approach aims to answer the research question “What is the new mobile technology trend to facilitate the use of mobile payment?” By applying a systematic literature review approach, sections will be used to determine influencing factors for users to use the mobile phone as a means of mobile payment in any of the publications from the last 5 years related to the topic. Therefore, the first section begins by searching for research publications in highly rated databases. A second section dedicated to data extraction and processing to obtain information relevant to answers to the research question. A third section dedicated to data analysis. The fourth and final section of conclusions and recommendations for future research [12]. This research contributes to existing work on technology acceptance by exploring whether it is useful to introduce individual and cultural factors into the UTAUT2 model when predicting technology adoption across cultures [13].

A. Introduction Stage

The research begins by searching for publications in the following databases: 1) Science Direct 2) Emerald 3) Scopus 4) Web of Science. To find the articles in the Scopus, Science Direct, WoS and Emerald databases, the keywords were used: “Mobile payment” or “Adoption” or “P2P” or “UTAUT2” or “Mobile payment acceptance” or “Intention of mobile payment use”, in a period of five years 2018 – 2023. 117 candidate publications were found, 59

Research questions:

RQ1: The trend of mobile technology influences the user's intention to use a mobile phone.

RQ2: The use of mobile phone technology is a means to facilitate mobile payment.

RQ3: Mobile technology ecosystems motivate the use of the mobile phone as a facilitating tool for mobile payment.

RQ4: The digital marketing strategy of companies motivates the user to use mobile payment.

C. Adoption and use of mobile payments

The literature on adoption and usage in the field of mobile payments predominantly emerges from IT adoption models such as TAM [16]. TAM pays less attention to actions and mechanisms that lead to goal achievement [17] and focuses on user behavior and technology. The unified theory of acceptance and use of technology and its improvement, UTAUT2[18]. While it is true the UTAUT resolves some of the shortcomings of TAM with the inclusion of a wide range of variables, some of which include the influence of social environments, such as facilitating conditions and social influence. However, technology adoption in developing countries is often governed by innovative technology use patterns [17]. Therefore, they take a different theoretical stance, that affordances capture the properties of technologies such as the possibilities for action they offer to achieve the desired goal [19]. The access possibilities consider social and contextual processes. They help to better understand how mobile payments can be used in multiple ways, as the technology emerges in a developing country environment.

IV. RESULTS AND DISCUSSION

A. List of research publications

In the selection of publications, 40 publications were found as selected publications. Table 3 shows two types of publications of the 42 selected: 21 (53%) conference publications and 19 (47%) research publications in journals.

Table 3
Publications chosen for this research

Data Base	Title	Year	Data Base	Title	Year
Emerald	Mobile payment adoption...[20]	2022	Science Direct	Acceptance of mobile commerce...[19]	2020
Emerald	Mobile payment use and payment...[13]	2023	Science Direct	Exploring consumer mobile payment...[21]	2023
Emerald	Emerging technology asse...[22]	2008	Science Direct	Examining the influence of trust and...[23]	2023
Emerald	Safety first: extending UTAUT to...[24]	2022	Science Direct	Exploring the growth challenge of...[25]	2019
Emerald	Mobile payments adoption...[4]	2020	Science Direct	Technological Factors of Mobile Payment...[8]	2019
Emerald	Empirical study on consumers...[15]	2022	Science Direct	The development of digital payments...[26]	2023
Emerald	The past and beyond of mobile...[27]	2022	Science Direct	Influencing factors of customer...[2]	2023
Emerald	Exploring country differences...[28]	2023	Science Direct	Does mobile payment adoption really...[29]	2023
Emerald	Institutional intervention in...[30]	2020	Scopus	Exploring Consumers' Intention to Adopt...[31]	2023
Emerald	Mobile payment technologies...[32]	2015	Scopus	A Study of the Impact of Cultural...[33]	2020
Emerald	Racial/ethnic differences in mobile...[34]	2022	Scopus	Developing a general extended UTAUT...[35]	2020
Science Direct	Customer adoption of p2p mobile...[36]	2022	Scopus	An affective response model for...[37]	2020
Science Direct	What are the leading factors for...[38]	2023	Scopus	Working in Virtual Teams: A Systematic...[1]	2020
Science Direct	The influence of the mobile money...[39]	2023	WoS	An integrated model combining ECM...[40]	2020
Science Direct	Why do people use mobile payment...[41]	2021	WoS	Young Generation's Mobile Payment...[42]	2021
Science Direct	Understanding the continuous usage...[9]	2023	WoS	Understanding consumer adoption...[43]	2023
Science Direct	An evaluation of the benefits of ...[44]	2020	WoS	Mobile payment is not all the same...[45]	2019
Science Direct	The dimensions of trust: An...[6]	2021	WoS	Factors Determining Consumer...[46]	2023
Science Direct	Point of adoption and beyond...[47]	2020	WoS	The Emerging Technologies of Digital...[12]	2023
Science Direct	An innovation resistance theory...[48]	2020	WoS	The adoption of digital payments in...[50]	2023
Science Direct	The adoption of a mobile payment...[5]	2021			

B. Contribution of authors by country

We can observe the contribution of researchers made by the 30 countries and the percentage of contribution in research related to mobile payment. Authors of the 42 selected publications. China is the country that makes the greatest contribution with 15 researchers of the gap found in regard to mobile payment, its contribution represents 35% of the total publications. The USA follows with 15 researchers with a contribution of 35%. Spain with 14 contributes 33%. Malaysia and India contribute 10 at 24%. South Africa contributes 17% with 7 researchers. Indonesia 6 researchers participate, representing 14%. Finland, Taiwan, Colombia, Italy and Pakistan contribute 5 researchers each, representing 12% respectively. Saudi Arabia, Jordan, Austria, Sweden represent 10% each with 4 researchers. South Korea, Ghana, New Zealand, Oman, and the United Arab Emirates participate with 7%, 3 researchers each. Canada, Costa Rica and Vietnam contribute 5% with 2 researchers. The rest of the countries contribute 1 indicated in Table 4 with a contribution of 2%

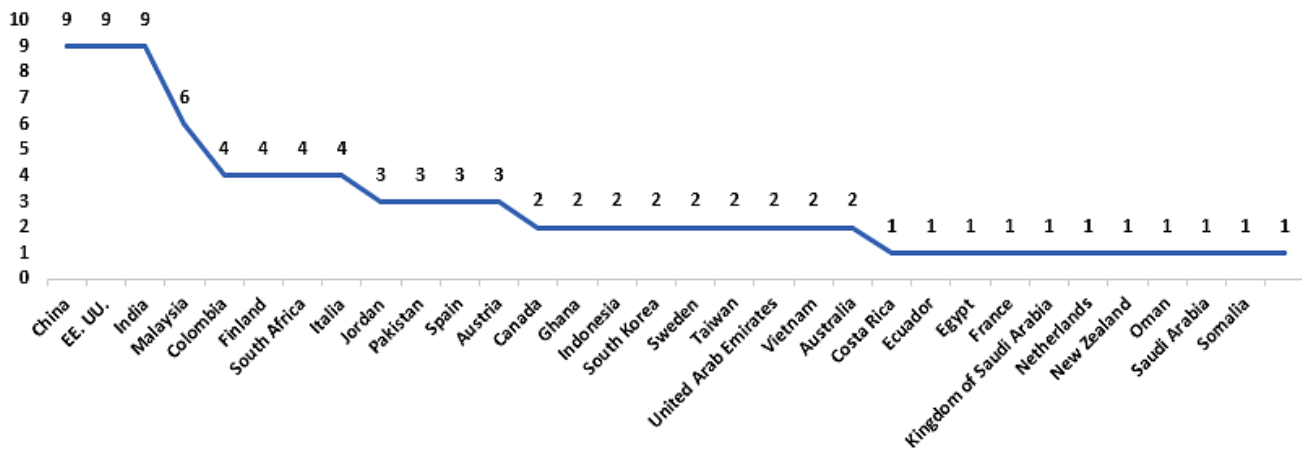
Table 4.
Contribution of authors by country

Country	Σ	%
China	15	36%
USA	15	36%
Spain	14	33%
Malaysia	10	24%
India	10	24%
South Africa	7	17%
Indonesia	6	14%
Finland	5	12%
Taiwan	5	12%
Colombia	5	12%
Italy	5	12%
Pakistan	5	12%
Saudi Arabia	4	10%
Jordan	4	10%
Austria	4	10%
Sweden	4	10%
South Korea	3	7%
Ghana	3	7%
New Zealand	3	7%
Oman	3	7%
Arab Emirates	3	7%
Canada	2	5%
Costa Rica	2	5%
Vietnam	2	5%
Holland	1	2%
Australia	1	2%
Ecuador	1	2%
Egypt	1	2%
France	1	2%
Somalia	1	2%

C. Contribution of Universities by Country

The countries that provide the largest number of universities that research mobile payment, first place is occupied by China, the United States and India with 9 Universities. Malaysia with 4 Universities. Colombia, Spain, Finland, and South Africa provide 4 Universities respectively. The rest of the countries contribute between 3 – 1 Universities. We can see the contributions by country in Chart No. 2.

Chart No. 2
Contribution of Universities by Country



D. Contribution of articles by Universities

85 universities contribute to the research and writing of the 42 selected articles. Some of them, their researchers contribute more than one article. Those that contribute the greatest contribution of research articles related to mobile

payment. In table 5 we can see that 11 of them contribute at least two articles and the remaining 74 universities do so with one article.

Table 5.
Contribution of articles by Universities

Institution paper number	Country	Contributions
Huazhong Agricultural University	China	2
Shenzhen University	China	2
Technological Institute of Costa Rica	Costa Rica	2
University of Zaragoza	España	2
University of Sevilla	España	2
Indian Institute of Management Shillong	India	2
K. J. Somaiya Institute of Management	India	2
Universiti Sains Malaysia	Malaysia	2
Sohar University	Oman	2
Gomal University	Pakistan	2
North-West University	Sud Africa	2
Abu Dhabi University	United Arab Emirates	2
	Otros	1

E. Models and Theories

In 42 research papers that publish their results on the use of mobile payment, they use basic theory that constitutes the frame of reference of the authors who carried out them. Making use of conceptual models or those proposed by them. The theories most used to investigate and analyze the use of mobile payment are the “Technology Acceptance Model (TAM)” (20%); “Unified Theory of Acceptance and Use of Technology (UTAUT)” (17%); “Unified Theory of Acceptance and Use of Technology Extended (UTAUT)”

F. Discipline of Authors

145 authors participate in the 42 research articles related to mobile payment. The discipline that contributed the most is Business Management, represented by 13 authors (10.24%), we can see the percentage relationships in Table 7.

Table 7.
Discipline of authors

Discipline of authors	Authors #	%	Discipline of authors	Authors #	%
Accounting	2	1,57%	Engineering and Technology Management	1	0,79%
Agricultural and Consumer Economics	1	0,79%	Finance	1	0,79%
Business	12	9,45%	Financial Economics	3	2,36%
Business Administration and Economics	1	0,79%	Industrial Economics and Management	2	1,57%
Business and Commerce	4	3,15%	Informatics	9	7,09%
Business and Innovation	1	0,79%	Information Management	3	2,36%
Business Economics and Statistics	3	2,36%	Information Resource Management	2	1,57%
Business Management	13	10,24%	Information Systems	3	2,36%
Civil Engineering	1	0,79%	Information Systems and Cyber Security	1	0,79%
Computer Science	1	0,79%	Information Technology	1	0,79%
Computer Science & Informatics	3	2,36%	Management	9	7,09%
Computing	2	1,57%	Management Engineering	7	5,51%
Computing and Information Technology	2	1,57%	Marketing	11	8,66%
Consumer Science	2	1,57%	Mechanical and Industrial Engineering	1	0,79%
Design	2	1,57%	Psychology	2	1,57%
Economics	5	3,94%	Sociology	1	0,79%
Economics and Management	8	6,30%	Telecommunication	1	0,79%
Economy and International Trade	1	0,79%	Tourism and Hotel Management	1	0,79%
Electrical and Computer Engineering	1	0,79%	Town planning	3	2,36%
				127	

(13%); “Theory of Reasoned Action (TRA)” (9%); “Theory of planned behavior (TPB)” (9%); “Theory of Diffusion of Innovation (DOI)” (7%); scale and combined with the previous ones: Expectancy theory of motivation; Expectation Framework and Confirmation Model (ECM); Rational Choice Theory (ISS); Theory of resistance to innovation (IRT); Social learning theory; Socio-cognitive theory (SCT). For more details you can see table 6.

Table 6
Models and Theories

Theories & Model used	Σ	%	Reference
Business Models (BM)	1	2%	17
Near-Field Communication Technology (NFC)	1	2%	15
Social-cognitive theory (SCT) and Regret theory	1	2%	32
Expectation confirmation model (ECM)	1	2%	35
Media System Dependency Theory (MSDT)	1	2%	5
Information Systems Success (ISS)	1	2%	40
Social Influence Theory (SIT)	1	2%	13
Theory of Consumption Values (TCV)	1	2%	22
Innovation resistance theory (IRT)	1	2%	42
Dynamic Capability Theory	1	2%	33
Technology Affordances And Constraints Theory (TACT)	1	2%	34
The theory of transaction cost economics (TCE)	1	2%	40
Diffusion of Innovation Theory (DOI)	3	7%	16, 19, 27
Theory of planned behavior (TPB)	4	9%	16, 19, 21, 29,
Theory of Reasoned Action (TRA)	4	9%	16, 19, 21, 25
Unified Theory of Acceptance and Use of Technology Extended (UTAUT2)	6	13%	11, 14, 21, 30, 31, 33
Unified Theory of Acceptance and Use of Technology (UTAUT)	8	17%	8, 16, 19, 21, 25, 35, 36, 38
Technology Acceptance Model (TAM)	9	20%	16, 19, 21, 24, 25, 27, 28, 29, 41

G. Factors and references

The analysis carried out in 42 magazines found 66 factors to consider in the intention to use the mobile phone as a strategic mobile payment technology tool for businesses that facilitate proximity payment ecosystems in marketing processes [49]. Tables 8a., b., and c. show 66 factors that people consider using the mobile phone as a means of strategic mobile payment technology in their commercial transactions.

The first 10 most important factors for the use of the Telephone as a mobile payment technology are: Social Influence, Effort expectation, Perceived risk, facilitating conditions, Intention to use, Performance expectation, Behavioral intention, Trust, Perceived utility, Perceived security.

Table 8a, 8b, and 8c
Factors and References

Tabla 8a. Factores y Referencias				Tabla 8b. Factores y Referencias				Tabla 8c. Factores y Referencias			
No.	Factor	#	Reference	No.	Factor	#	Reference	No.	Factor	#	Reference
1	Social influence	16	3, 4, 8, 9, 11, 13, 31, 32, 33, 36, 38, 39, 44, 45, 47, 48	23	Gender	3	12, 29, 48	45	Perceived specificity	1	7
2	Effort expectation	13	4, 8, 9, 11, 31, 32, 36, 38, 39, 44, 46, 47, 48	24	Continuous use	3	4, 15, 21	46	Facilitating conditions	1	1
3	Perceived risk	12	11, 13, 21, 29, 31, 33, 34, 36, 37, 39, 44, 48	25	Mobile utility (mu)	2	16, 29	47	Dissatisfaction	1	7
4	Facilitating conditions	12	4, 8, 9, 11, 31, 33, 32, 38, 39, 44, 47, 48	26	Anxiety	2	38, 40	48	Continuation intention	1	46
5	Intention to use	11	13, 21, 27, 31, 32, 34, 35, 41, 45, 46, 48	27	Collectivism	2	39, 43	49	Expenditure levels	1	28
6	Performance expectation	11	1, 4, 8, 9, 11, 31, 32, 33, 38, 46, 47	28	Individualism	2	39, 43	50	Descriptive norm	1	40
7	Behavioral intention	11	2, 4, 8, 9, 11, 33, 39, 43, 44, 47, 48	29	Mobile payment	2	21, 28	51	Offer of feedback	1	30
8	Trust	9	4, 7, 9, 11, 33, 34, 37, 38, 46,	30	Satisfaction	2	13, 46	52	Offer of rewards	1	30
9	Perceived utility	8	7, 17, 29, 34, 35, 38, 43, 45	31	Price value	2	11, 39	53	Opportunity for reflection	1	21
10	Perceived security	7	1, 11, 17, 21, 33, 45, 46	32	Frequency of use	2	10, 37	54	User engagement	1	30
11	Expectation of performance	7	4, 33, 36, 39, 44, 47, 48	33	Social networks	2	14, 42	55	Perceptions of narrative capability	1	30
12	Personal innovation	6	16, 29, 34, 35, 38, 39	34	Perceived quality of information	2	5, 7	56	Educated people	1	44
13	Hedonic motivation	5	1, 4, 11, 31, 39	35	Mobile trading	2	1, 6	57	Religiosity	1	47
14	Perceived quality	4	8, 9, 32, 35	36	Access to information	1	21	58	Damage repair	1	38
15	Habit	4	1, 4, 11, 39	37	Service usage attitude	1	38	59	Retention of the mobile platform	1	30
16	Behavioral intention	4	1, 16, 36, 44	38	Consumer attitude	1	38	60	Payment satisfaction	1	28
17	Attitude of use	4	3, 17, 47, 38	39	Promotional activities	1	48	61	Customer satisfaction	1	34
18	Easy of use	3	17, 29, 45	40	Convenience	1	21	62	Technical support	1	38
19	Perceived easy of use	3	16, 38, 43	41	User behavior	1	45	63	Female temperament	1	43
20	Consumer innovation	3	8, 9, 32	42	Perceived transaction convenience (pt)	1	16	64	Male temperament	1	43
21	Adoption intention	3	31, 40, 45	43	Power distance	1	43	65	Usage	1	44
22	Perceived cost	3	22, 36, 44	44	Demonetization effect	1	44	66	Perceived transaction speed	1	16

Although it is true that the first 10 factors mentioned above are considered in this analysis, it does not mean that the others are less relevant. It should be noted for the reader that the factors with fewer references have the same weight in the strategic decision and trend in the current marketing and business environments [16].

V. CONCLUSIONS

When carrying out this Systematic Literature Review, research projects related to the use of smartphones as a technology that facilitates mobile payment were found, however, they have not yet reached a level of studies that investigate the smartphone as a tool that facilitates payment. mobile as a marketing strategy that can compete with traditional means of mobile payment, “Traditional payment systems based on cash and bank cards are being replaced by new innovative formats” [31]. The 51% of publications in conferences and workshops found as primary studies is substantial proof of this. Furthermore, the results of the quality evaluation carried out in the

Primary studies show that the assessment of their proposals is not yet satisfactory in terms of the technology acceptance model (TAM) [27], although they can be considered adequate in terms of the Unified Theory of Acceptance and Use of Technology (UTAUT) [35].

We must consider that the analysis of the literature carried out reveals that the coverage of research studies dedicated to the analysis of mobile payment is not oriented towards the use of the mobile phone as a strategic business technology tool that facilitates payment, it is still partial, that is, The studies focus on the adoption of mobile payment methods and not on the instrument of smartphone technology and its variants as forms of proximity payment in all its concepts studied in this literature review. With the SRL approach used, 66 key factors are determined that influence

users in the use of the mobile phone as a strategic business technology tool that facilitates mobile payment.

The findings reflect the behavior of users regarding the use of mobile technology. To overcome this limitation, future research can focus on user-perceived safety and risk underpinning marketing processes in new users belonging to different age groups across different geographical and cultural boundaries. Even the literature has supported the need to examine user behavior in the social economic context.

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