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An Analysis of Consumer Decision-Making in Digital Mobile Payment Adoption: Exploring Influencing Factors

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ABSTRACT

Despite every one of the upsides of mobile payment services (MPs), they are unutilized by a sizable client base. This paper analyzes the central drivers of utilizing MPs for purchasing purposes from the consumers' point of view in Uzbekistan. Given the Technology Acceptance Model (TAM), the study built up a seven-figure model to uncover the determinants of customers' goals to utilize MPs. 300 respondents in Uzbekistan were selected, and 276 substantial responses were incorporated into the analysis. The structural equation model results applied that customers' goal to utilize MPs for purchasing purposes is impacted by trust, system usefulness, social influence, risk, hedonic motivation, and attitude. The factor, facilitating conditions was not significant interestingly which the most distinct finding of that study is. Considering the findings and discussion, the paper concludes with the notion that mobile payment as a digital innovative financial technology is influenced by most of the factors that mobile operators should look at closely.

1. Introduction

FinTech, or financial technology, is becoming more and more popular these days. The world where more than 12,000 sizable, well-established businesses have emerged worldwide [79]. Due to the widespread usage of new technologies and the increasing digitization of daily life, mobile payments (MPs) offer numerous advantages to modern society [80]. After the coronavirus pandemic, mobile payment has changed the way of payment [81].

The desire to know what factors influence people's willingness to use mobile payments (MPs) services, or "payments over a mobile device" [1], has prompted researchers to investigate this topic. Customers' payment habits have shifted significantly due to advancements in products and

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businesses. More efficient payment mechanisms are being developed by merchants, business organizations, and other service providers [2, 3]. As a result, cell phone growth and portable technology have significantly increased in recent years. Cell phones were primarily used to make and receive phone calls and text messages when they came out. Nonetheless, cell phones now provide a more comprehensive range of services, such as capturing pictures, purchasing tickets, opening doors, and starting autos, among other functions. Why can't a cell phone be used as a debit or credit card if it can be used as a camera, TV, or key? [4, 5].

Mobile payment offers various services, including the flexibility to not handle multiple cards with less time in payment. The convenience of using cell phones could be a solid reason to use new technology [10]. The World Bank has categorized Uzbekistan's economy as lower middle-income [82]. According to the Asian Development Bank (ADB) in 2018 [5], mobile commerce in Uzbekistan and Kyrgyzstan is now in the early stages of development. Conversely, mobile commerce has gained significant acceptance in China, which is geographically close. About 25–30% of Uzbekistan's population, habitually adopted the target market for MP systems. But young people are driving the trend, enabling them to adopt the emerging mobile payment system[11]. Customers between the ages of 20 and 34 happily use the tech gadgets as wallets. Shoppers in the 34-plus age group, on the other hand, are substantially less enthusiastic about this new technology [12, 13].

Despite the ease of using mobile businesses, firms that offer MP services have not taken off as quickly as anticipated in many areas, and they are suffering from a lack of customer acceptance[1, 6]. This reality emphasizes the discrepancy between the potential and actualities of various trades. People who learn about MP applications are hesitant and dubious [14]. Although market factors provide fertile grounds for MPs to be received quickly, they are moving very slowly [7, 10]. MP frameworks have a place in the electronic business sector thanks to the rapid growth of mobile technologies and the extensive system of mobile clients [15]. A roadmap for 2020–2022 called "Digital Uzbekistan–2030" [104-107] was adopted, with a focus on e-government, digital infrastructure, education, and industry development [83]. In Uzbekistan, different payment platform like, Click, Payme, M-bank, Upay, Humo, Oson, etc. that enable online payments for mobile communications. Mobile payment in the digital economy provides a significant prospect for aspiring entrepreneurs. The proliferation of the Internet, especially through smartphones, has had a significant impact on the financial system, particularly in relation to mobile payments (MPs) [79]. Telecom operators, financial institutions, and merchants have made significant efforts to promote the use of mobile services through the Internet, particularly through mobile phone usage. Mobile payment as a FinTech plays a significant role in the global entrepreneurial ecosystem, benefiting both developed and emerging economies [84, 85]. This has resulted in a rapid expansion in entrepreneurship [86, 87], especially young people are getting more influenced after having digital economical services like mobile payment [88].

Ample of companies that provide mobile payment technologies is speedily increasing [14, 16]. The question of why clients are opposed to using MP breakthroughs remains unsolved. To successfully promote the selection of mobile payments (MPs), this paper will take an in-depth look at the factors that compel customers to use mobile payments (MPs) in Uzbekistan, as well as customer acceptance of such innovation. The review is divided into two sections that will help you comprehend the mobile payments (MPs): (1) investigate the Technology Acceptance Model (TAM) by including critical variables that are important in the MP setting, utilizing a research model that combines a few hypotheses inspecting the significant factors influencing customer motivation for utilizing mobile payments (MPs); and (2) investigate restricted to the case of Uzbekistan, where lack of research is common to distinguish the critical factors influencing customer utilization of mobile payments (MPs) [17]. Lack of research of MP adaption research in Uzbek context and government priority with it, more

research is still needed about consumer behavior, as past studies only provided little material for the primary factors influencing customer acceptance of mobile payments (MPs).

This paper researches the next key inquiries:

1) What are the principal elements for customer adoption of MPs?
2) What is the level of significance (positioning) of each of the elements for customers?

2. Literature Review

2.1 Mobile Payment Service

Mobile technology has become an essential part of everyday life [14, 18, 19]. The main thing a customer needs for an MP is a cell phone that can connect to the Internet [20]. mobile payments (MPs) use cell phones as an essential part of the process [7, 21]. The most significant difference between mobile payments (MPs) and other payment methods. MP is the most important term that needs to be explained. There is no one definition of MP. A different way to electronically handle payments [14] or "payments over a cell phone" [14] is the most commonly used definition for an MP. This cell phone is the primary identifying standard for MPs compared to other payment methods. Some studies [21, 22] look at all mobile communication devices. Other studies, however, only look at cell phones. mobile payments (MPs) are considered the next step in evolving electronic payment transactions. They could use them to pay for trains, plane tickets, hotel rooms, and meals [23]. Dahlberg [2] include wireless and ten other communication ways as mobile payments (MPs) definitions. An MP is "any payment in which a cell phone is used as part of a request to start, carry out, or possibly confirm a payment" [24, 25]. mobile payments (MPs) are a type of payment transaction that takes place electronically. The buyer uses portable communication devices like cell phones to start, approve, or confirm a payment [26]. The second type is when a customer pays for services and goods bought over the Internet using a cell phone. The last kind is when a customer pays for something at the POS with a cell phone.

According to Boston's Federal Reserve Bank, USA, two prominent types of mobile payments (MPs) are: far away and close by [18, 19]. The first two types of mobile payments (MPs) listed above are remote mobile payments (MPs), while the third type is the example of a proximity MP. In this paper, we will focus on the best way to use "proximity mobile payments (MPs) using NFC-enabled cell phones and the contactless monetary payment infrastructure" for obtaining purposes [11, 27]. Remote mobile payments (MPs) are very useful for payments to dealers and person-to-person payments in places that don't have a standard POS system. Remote mobile payments (MPs) also include paying for items bought online with a cell phone. Remote mobile payments (MPs) might be completed by utilizing the current budgetary payment infrastructure [27, 28].

Most proximity mobile payments (MPs) use RFID (Radio Frequency Identification) or NFC (Near Field Communication) technology, which is essential for POS and vending machines. Because of contactless payments, the customer never has to let go of the payment device [29]. This payment type is beneficial because it takes almost no time to finish and eliminates the need to use a physical card [30]. The phone's built-in NFC technology is the vendor's contactless payment-enabled POS system, just like the contactless devices and payment gadgets used today [27]. A standard barcode payment could be the MP option available at places like Starbucks and McDonald's. The cell phone has an RFID chip that works without touching it [24]. RFID technology usually has a stationary point of sale (POS). Also, RFID has a more extended transmission range than NFC. NFC is compatible with "many introduced contactless payment readers," which are used in many POS terminals [31, 32]. The method of Proximity payment has a few parts: (1) Payment Gateway, (2) Portable Device, (3) Contactless Reader, (4) E-Wallet App, and (5) Wireless Network [31]. Proximity payments could be

beneficial if using credit cards is complicated or dangerous or if you only have a short time to purchase [30].

Prior researches in the field of customer adoption of Mobile payments (MPs) have concentrated on individual mobility [1, 14] compatibility [14, 16, 34-36]; convenience [2, 11, 23, 26]; subjective/social norms [2, 14]; perceived risk [7, 35, 37] ; trust [7, 34] perceived benefits/relative advantage [7, 35] Security [2, 11, 34] perceived ease of use and usefulness [2, 23] and cost [11, 16]. Security, technology anxiety, transaction speed, expressiveness, context, and observability are among the least researched aspects in Uzbekistan [1, 34]. Regardless of corporate projections about the massive capability of Mobile payments (MPs), it is essential to comprehend what prevents clients from adopting this innovation for regular use in the purchasing process [33].

2.2 Technology Acceptance Model (TAM)

There are a variety of ways to study innovation utilization behavior. The TAM model is widely recognized as one of the most prominent theories for explaining users' behavior in adopting technology [89, 90]. The Technology Acceptance Model (TAM) is considered a crucial framework for studying an individual's inclination to either reject or embrace new technology [91].

We employ Davis' model for consumer affirmation of diverse information architectures as a basis for this investigation, which is widely accepted [38]. "Technology Acceptance Model" (TAM) decodes customer perspectives on different mechanical progressions and will assist in investigating MP allocation from clients' points of view [17, 38, 39]. According to this concept, a customer's decision on whether to acknowledge a given improvement can be determined and quantified. Perceived utility and perceived ease of use are two of the model's primary factors of invention recognition. The TAM is widely accepted as a reliable and effective tool for predicting customer behavior [40-43].

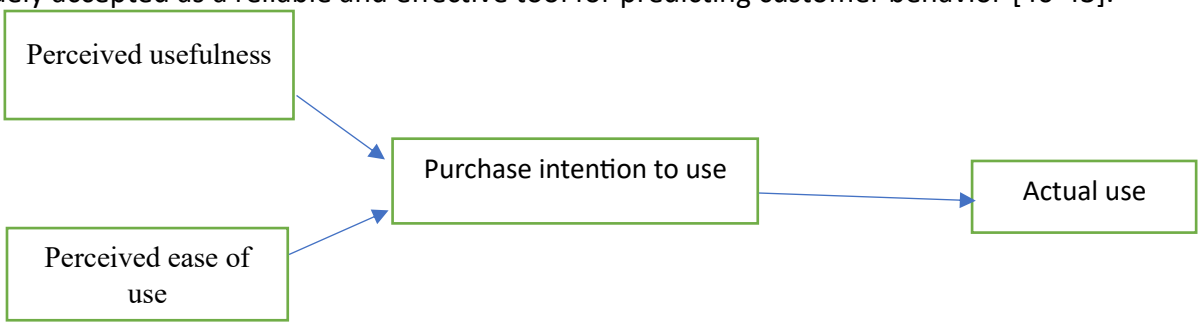

Fig. 1. Original Technology Acceptance Model by (Davis, 1989)

2.3 Model Development

Kim, Mirusmonov [23] say that, although more and more people are using technology to buy things, few studies have been done to look at how people accept technology with such factors that we consider [40, 44-46]. But, as far as we know, the previously mentioned parts of the extended TAM (social influence, system usefulness, facilitating conditions, hedonic motivation, trust, risk, and attitude toward intention to use Mobile payments (MPs)) have not yet been looked at as a whole [43]. So, in this study, we want to find out how people see the system of usefulness, ease of use, trust, risk, hedonic motivation, and attitude toward their plans to use mobile payments (MPs) for additional purchases. Using Venkatesh, Thong [47] research, we build on our ideas about the main TAM by adding an extra social construct that is a mix of the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB). In addition to technology-oriented factors, personal use qualities must also be considered. This study's proposed conceptual model is based on a detailed review of pertinent writing about how mobile payments (MPs) are used. This research expands the TAM to the level of behavioral intention and adds the compatibility construct as follows:

2.3.1 Social Influence

Since social influence is the driving force that emerges after the initial transmission of something new, it is required to disseminate new products [48]. It is an example of social influence when other people impact an individual's thoughts, feelings, or behaviors. Social influence in UTAUT (Unified Theory of Acceptance and Use of Technology) refers to the degree to which individuals perceive that important others—such as friends, family, or colleagues—believe they should use a new technology [49-51]. Viswanath [49] reinserted and approved social influences as a vital indicator of expectations in the first UTAUT, demonstrated and revalidated it in the updated UTAUT2 shows reinserted and approved social influences as a significant indicator of expectations in the first UTAUT Unified Theory of Accept [50, 51]. First and foremost, such assessments are a component of a broader arrangement of observations that reflect the extensive trip involvement. It is possible that aspects of the accessible travel experience distinctions, such as acknowledgements of the referents' NFC-MP perspectives, turned out to be of utmost significance to clients. Social influence often creates normative pressure to conform to what is considered acceptable or trendy [50]. If a consumer's social circle values or regularly uses mobile payment services, the individual may feel compelled to adopt these services to fit in or meet social expectations [30]. Influential social contacts can also provide valuable information, recommendations, and reassurance about the use of mobile payment services, facilitating a more informed and confident adoption process [17,18]. Previous studies also highlight the role of social influence on intention to use technology [49, 51-53].

Based on the discussion above, the following hypotheses were developed:

H1: There is a positive relationship between consumers' social influences regarding MP

2.3.2 System Usefulness

The system usefulness afforded by innovation is directly proportional to a customer's motivation for purchasing and utilizing a product bearing that innovation [38]. The phrase "the degree to which a person believes that employing a certain system will boost his or her job performance" encapsulates the concept of "perceived system usefulness" [16, 36]. There is empirical evidence in the literature on mobile technology that supports a similar conclusion. Perceived system usefulness has a significant influence on customers' propensity to utilize MP technologies [23, 24]. The utility of a system will illustrate that the application of a specific technology may be advantageous for accomplishing a particular goal by a specific individual [52]. According to Moslehpour, Thanh [53], it is "the degree to which the client believes that the online purchase will allow them access to valuable data, make offer examination less difficult, and speed up the purchasing process." We propose the following hypotheses:

H2: There is a positive relationship between system usefulness regarding MP

2.3.3 Facilitating Conditions

A person's opinion that a specific framework is simple or plain is called "facilitating conditions" [38]. As a result of the TAM model's trustworthiness, Karnouskos [24] have developed a behavioral model that joins the ranks of their predecessors. Faith and usefulness are linked in this concept, where the enabling conditions influence belief.

Numerous experts have shown facilitating conditions to significantly impact whether consumers want to utilize new technology [38, 54]. Various researchers [2] emphasize the significance of creating favorable conditions for MP acceptability [26]. Facilitating conditions enhance mobile payment adoption by providing essential resources like reliable internet and compatible devices, alongside effective technical support [17,19]. Adequate infrastructure and strong security measures also play a crucial role, making the technology more accessible, secure, and easy to use, thereby encouraging

more users to embrace mobile payments [26,21]. In the case of fundamental regular administration exchanges, MP channels are well-suited because they are self-service orientated. Mobile payments (MPs), according to Dahlberg, Guo [55], cannot exist without the presence of enabling conditions. These observations lead to the following hypotheses:

H3: There is a positive relationship between facilitating conditions regarding MP

2.3.4 Hedonic Motivation

The degree to which customers believe using an IS (information systems) framework is entertaining is known as hedonic motivation [47, 56]. The focus of reception at first, when most consumer IS were supposed to be mostly errand situated, was on internal convictions and functional characteristics [57]. After learning that customers will use IS to complete tasks and interact, IS architects revised their plan's justification. According to Slade, Williams [58] the development of IS was marked by vivacity, excitement, esteem, and contentment, ineluctably signifying non-utilitarian capacities and energizing researchers' enthusiasm.

These elements have been shown to influence shopper IS choices and be crucial in managing customers' behavioral results [58, 59]. Therefore, the current MP relies on the outline that fits the hedonic character of the initial steps of consumers' buying successions while tending to one of the final stages of the utilization procedure—payment. Thus, the following hypothesis was developed.

H4: There is a positive relationship between hedonic motivation and MP

2.3.5 Trust

Another expansion of the TAM is trust, which is observed to be the center advancement that considers driving consumer acceptance [60]. Trust, with regards to mobile payments (MPs), is characterized as how much mobile payments are good with the qualities, encounters, and behavioral examples that purchasers have[14, 61]. For instance, if they now utilize mobile payments (MPs) for additional purchases, they will probably also use them in restaurants, hotels, etc. Versatile administrations' similarity with purchaser needs positively affects the aim to utilize these services [16, 36]. Trust, together with perceived facilitating conditions and system usefulness in a roundabout way, influences a purchaser's aim to utilize mobile payments (MPs) [23]. Individuals' ways of life will incredibly influence their choice to use MP services [35]. Schierz, Schilke [14] have found that perceived trust is a helpful augmentation of the TAM. Along these lines, it could expand the proactive power in the basic leadership procedure of utilizing technology. In this study, we characterize trust as the shoppers' conviction that mobile payment exchanges will be handled as per their desires. Mirroring the expanding significance of trust in mobile commerce, in this study, we propose trust as an antecedent variable to the attitude and intention to utilize a mobile payment. Customers' attitude toward its use reflects the swelling significance of trust in m-commerce [62]. Therefore, the intention to use it will significantly be improved by greater trust in the payment system [35]. Therefore, we propose the following:

H5: A relationship is a positive relationship between trust and MP.

2.3.6 Risk.

Risk examination is based on two aspects: vulnerability (consumers' lack of knowledge regarding possible outcomes when they make a purchase) and the unavoidable adverse effects of the purchase. Later, this same scientist stated that every shopping behavior is risky because it cannot predict the outcomes with certainty [53, 58].

It as the outcome of a choice that "mirrors the variety of its inevitable outcomes," Al-Jabri and Sohail [63] define it as the likelihood that a development's use cannot be protected. Kim, Mirusmonov

[23] define it as "a buyer's recognition of the instability and the unfriendly results of an exchange performed by a merchant". Additionally, risk will negatively impact the client's confidence in the flexible installment framework [64], making using the new installment framework less of a goal [65].

Organizations are in danger from security concerns since they join many small vendors [16, 55]. Security has been the most crucial problem given the current level of prosperity for electronic exchanges and corporate information interchange [66]. One of the major obstacles preventing an MP promotion from moving forward is the security [23, 67]. According to this theory, subjective security refers to how much a person "trusts that employing a specific mobile payment approach will be secure" [53]. Therefore, we hypothesized the following:

H6: There is a negative relationship between risk and MP

2.3.7 Attitude

Fishbein [68] argues that attitudes are formed over time as individuals have more and more experience with a specific activity. To build a particular behavior, the distinct hypothetical models (TAM, TRA, and TPB) have shown that attitude is a fundamental precondition [69]. According to Fishbein [68] attitude is a multi-faceted construct comprised of a psychological, an enthusiastic, and a conative or behavioral evaluation. The psychological segment refers to a person's knowledge about a product or service (experience, beliefs, and opinions). In contrast, the active component refers to a person's proclivities toward a specific question (feelings, emotions, and evaluations) [67]. We conceptualized the following:

H7: There is a positive relationship between attitude and intention to use MPs.

The conceptual research model implied by our six hypotheses and empirically tested in the following section appears in Figure 2.

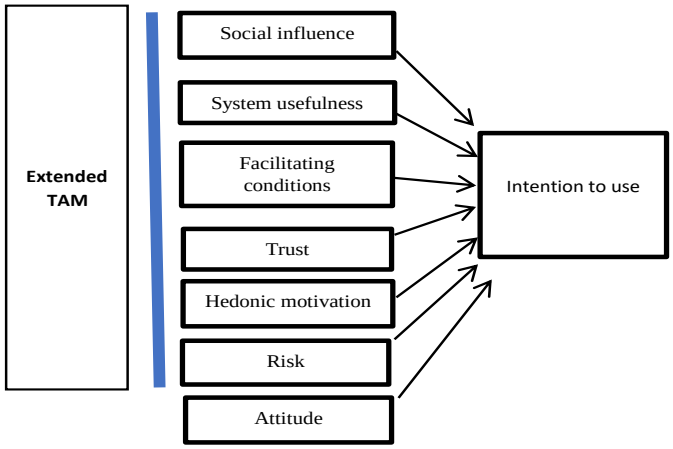

Fig. 2. Conceptual Model of the research

2.3.8 Intention to use:

The level of motivation of online customers to engage in an activity can be assessed by examining their behavioral intentions [92]. Considering the existing data on the TAM model, which has confirmed the connection between behavioral intention and use, most of the current research on the technology acceptance model are on predicting behavioral intention. This intention is defined as the strength of an individual's desire to engage in a particular behavior [93, 94, 95]. Pavlou [96] observed that behavioral intention refers to a customer's inclination and eagerness to participate in mobile payment. Raza et al. [97] defined behavioral intention as the state in which buyers are prepared to engage in a transaction with sellers. According to Day's [98] research, purposeful measurements may be more effective than behavioral measures in attracting a customer's attention. Moreover, the

extended factors of TAM have a positive correlation with mobile payment adoption behavior [76, 97,99].

3. Research Methodology

The research model was tested with an online questionnaire survey. Quantitative research methods were used, which can't be backed up by outside sources and could lead to one-sided answers. A convenience sampling technique was used to select the study samples. Using data from the questionnaire, the study first performed descriptive statistical analysis, correlation analysis, reliability analysis, and validity analysis using IBM SPSS 25.0. Next, we examined the study model's trajectory using IBM AMOS 25.0. The study used IBM AMOS to analyze the path of the model. The study used IBM AMOS since it is a robust statistical software that is specifically designed for doing structural equation modeling (SEM). AMOS can do several SEM procedures, such as confirmatory factor analysis and path analysis.

3.1 Questionnaire Design

An online survey was used to compile a report on 31 requests for information. The research utilized qualifying questions to narrow the field of potential participants. If they had used a cell phone in the last five years, they would participate in the study. For this questionnaire, those clients who now use cell phones were excluded. Results were then presented to each respondent utilizing a rating scale. This review identifies social influence, system utility, facilitation conditions, hedonic incentive, trust, and risk aversion as the most critical factors in accepting proximity payments as a payment method of choice. The respondents used a Seven-point Likert scale to indicate their degree of comprehension which ranged from 1 (strongly disagree) to 7 (strongly agree). The questionnaire has two sections. The questionnaire begins by asking about the respondent's basic demographic and socioeconomic backgrounds (gender, age, occupation, job title, years of experience, level of education, years of using cell phones, and income level), then the next part was designed for measuring the related variables considered for the that study.

3.2 Measurements Scales

The questionnaire items were adopted and adapted from the scales that were used in previous studies on similar researches (Table 1).

Table 1
Measurement Scales using in the research model

Constructs	Items	Sources
Social Influence (Socinf)	People who are imperative to me, find the use of mobile payment services valuable. People who inspiration my behavior think that I am capable of using mobile payment services. People who are significant to me think I should use mobile payment services.	[70]
System Usefulness (Sysuse)	Use of mobile payment enable me to make payment easily. Use of mobile payment enable me to conduct transactions. A consumer experience is increased with improved flexibility by using mobile payment services. I have found the system of mobile payment useful.	[64]
Facilitating Conditions (Faccon)	Learning to use a mobile payment would be easy for me. It would be easy to get a mobile payment system to do what I want it to do. My interaction with a mobile payment system would be clear and understandable. Overall, I would find the mobile payment system to be easy to use.	[71]

Table 1
Measurement Scales using in the research model (Cont…)

Constructs	Items	Sources
Hedonic Motivation (Hedmot)	Using mobile payments for purchasing purposes is fun. Using mobile payments for purchasing purposes is enjoyable. Using mobile payments for purchasing purposes is entertaining. Using mobile payments for purchasing purposes is pleasant.	[72]
Trust (Trust)	I trust mobile payment systems to be reliable. I find mobile payment services secure for conducting my payment transactions. I believe mobile payment systems are trustworthy. Even if the mobile payment systems are not monitored, I'd trust them to do the job correctly. I trust mobile payment systems to be secure.	[64;73]
Risk (Risk)	Information about my mobile payment transactions would be known to others. I believe mobile payment transactions may be modified or deleted by others. I would label adopting mobile payment systems as a potential loss. I believe that overall riskiness of mobile payment systems is high.	[64]
Attitude (Att)	I have a positive attitude towards this portal. I intend to visit the portal frequently. Using mobile payment services is beneficial. Using mobile payment services is a good idea.	[31]
Intention to use (IU)	I intend to use MPs frequently to buy products and services. I intend to use MPs in the future I intend to use MPs as much as possible	[77; 78]

3.3 Data Collection

An organized, electronic questionnaire was circulated online throughout one month via online using Google form in Uzbekistan between February-April 2023. The number of participants in the study consisted of buyers in Uzbekistan more than 20 years old and who had utilized a cell phone for the most recent five years. We only consider these respondents to ensure that respondents know the facts of mobile payments with substantial experience of using at least five years. Toward the finish of the information accumulation period, 276 review results were considered legitimate for factual examination. Keeping in mind the end goal to guarantee exactness and increase outer legitimacy of the review comes about, 24 of 300 gathered surveys were precluded because of missing information. In this manner, 276 polls were at last used for experimental investigation. The ratio of male and female respondents in the study is (male: 62.2% and female: 37.8%). Many respondents fall between the age of 20 to 30 years (63.5%) while 30.7% are from 31 to 40 years old.

4. Analysis and Results

To determine the relationship of seven factors (system usefulness, social influence, facilitating conditions, trust, risk, hedonic motivation, and attitude correlation was conducted to examine the usage of Mobile payments (MPs). There was a total of 276 responses utilized for the analysis. A prior study Venkatesh, Thong [47] shows that age and gender are the most significant demographic characteristics that explain MP adoption. Nevertheless, recent research [4] indicates that young and middle-aged MP users will be the most active MP adopters in the coming years.

4.1 Reliability and Validity

4.1.1 Reliability analysis of measurement tools

Internal consistency was measured by utilizing Cronbach's α coefficient as a technique to build the reliability of estimation devices by finding and dispensing with things that bother reliability when

utilizing different things to quantify a similar idea individually, Cronbach alpha indicator (Table 2) is applied to examine the reliability of the constructs since the Cronbach's Alpha score of .70 was believed suitable by [74]. All the variables show relatively high-reliability estimates, ranging from .788 (trust) to .917 (hedonic motivation).

Table 2
Reliability of each scale

Variables	Items	Cronbach's α
Social influence	3	.863
System usefulness	4	.892
Facilitating conditions	4	.892
Trust	5	.788
Risk	4	.907
Hedonic motivation	4	.917
Attitude	4	.873
Intention to use	3	.817

4.2 Confirmatory factor analysis

To test the convergent and divergent validity of the scales, a confirmatory factor analysis was performed. To evaluate construct validity, it is necessary to examine intensive validity, discriminant validity, and legal validity.

Discriminant validity is also made by examining the relationship between potential variables as well as the law validity. Discriminant validity can be evaluated in the following way. (1) Examine whether the average variance extraction value (AVE) is greater than the square of the correlation coefficient between concepts. In other words, if the correlation coefficient is squared, it is judged that there is a validity of discrimination. (2) It is a method of judging whether to reject the hypothesis that the concepts are the same. In other words, if the correlation coefficient ± 2 × standard error is not 1 in the 95% confidence interval, the discriminant validity is considered (3) After selecting a pair of theoretically similar concepts, we set a constraint model with fixed correlation coefficient between two concepts and a free model with free correlation between the two concepts, (P = .05 to 3.84 or more), the discriminant validity between the two concepts seems to be reasonable.

In this study, before analyzing the hypothetical relationship between constitutional concepts, a measurement model was set up to analyze the determinants of social influence, system usefulness, facilitating conditions, hedonic motivation, trust, risk and attitude are the most frequently used indexes for the evaluation of conformity with the model. The goodness-of-fit index (GFI), the adjusted goodness-of-fit index (Normed Fit Index), IFI, Root Mean Square Residual (RMR), and Root Mean Square Error of Approximation (RMSEA).

Table 3
Factor analysis of confirmatory factors and SE fitness

Interpretation criteria	Index		Interpretation criteria	Fit Index
	χ2: p<.05	χ2=1036.915 ***	χ2: p<.05	χ2=3692.059**
GFI	0.9	.774	.9 More than	.907
AGFI	0.9	.725	.8 More than	.888
CFI	0.9	.923	.9 More than	.947
NFI	0.9	.900	.9 More than	.923
IFI	0.9	.924	.9 More than	.948
RMR	.0.8 Below	.057	.08 More than	.082
RMSEA	.1 Below	.027	.1 More than	.025

Note: * :P<0.1, **:P<0.05, ***:P<0.01

Table 3 presents various indices used for evaluating the fit of a statistical model, particularly in the context of structural equation modeling (SEM). χ2 (Chi-Square): This criterion assesses the discrepancy between the observed and expected covariance matrices. A significant p-value ($p<.05$) suggests that the model does not fit the data well. In your table, the calculated χ2 value is 1036.915, which is significant (*** denotes significance). GFI (Goodness of Fit Index): GFI measures the proportion of the observed covariance that can be explained by the model. A value closer to 1 indicates a better fit. In the table (4), the GFI value is .774, which is below the desired cutoff of .9 (denoted as .9 More than). AGFI (Adjusted Goodness of Fit Index): AGFI is like GFI but adjusts for the degrees of freedom. It also ranges from 0 to 1, with values closer to 1 indicating a better fit. In your table, the AGFI value is .725, which is below the desired cutoff of .9 (denoted as .9 More than). CFI (Comparative Fit Index): CFI compares the hypothesized model with a baseline model where variables are uncorrelated. Higher values, closer to 1, suggest a better fit. In your table, the CFI value is .923, which is above the desired cutoff of .9 (denoted as .9 More than). NFI (Normed Fit Index): NFI is another measure of fit, ranging from 0 to 1. Values closer to 1 indicate a better fit. In your table, the NFI value is .900, which is above the desired cutoff of .9 (denoted as .9 More than). IFI (Incremental Fit Index): IFI compares the fit of the hypothesized model to a null model. Values closer to 1 indicate a better fit. In your table, the IFI value is .924, which is above the desired cutoff of .9 (denoted as .9 More than). RMR (Root Mean Square Residual): RMR measures the discrepancy between the observed and predicted covariances. Smaller values suggest a better fit. In your table, the RMR value is .057, which is below the desired cutoff of .08 (denoted as .08 Below). RMSEA (Root Mean Square Error of Approximation): RMSEA estimates the discrepancy between the predicted and observed covariances, adjusted for model complexity. Smaller values indicate a better fit. In your table, the RMSEA value is .027, which is below the desired cutoff of .1 (denoted as .1 Below). Based on the provided criteria, the model seems to have mixed results. The χ2 value is significant, indicating a poor fit. Additionally, the GFI and AGFI values are below the desired cutoff of .9, suggesting inadequate fit. However, the CFI, NFI, IFI, RMR, and RMSEA values meet the desired criteria, indicating a reasonable fit. It is important to consider all these indices collectively and in the context of your specific research question or hypothesis.

Exploratory factor analysis was utilized to identify the underlying relationships between measured variables. We used the maximum likelihood to achieve the best possible results. The results are shown in Table 4.

Table 4.
Results of exploratory factor analysis

Variables	Items	Factors		
		1	**2**	**3**
Social influence	1	.799		
	2	.871		
	3	.813		
System usefulness	1		.714	
	2		.776	
	3		.682	
	4		.713	
Facilitating conditions	1			.754
	2			.658
	3			.726
	4			.759
Eigen Value		2.359	2.635	2.579
Variance Description (%)		78.621	65.873	64.474

In table 5, Confirmatory factor analysis estimates the factor loadings for each item. The values indicate how well each item measures its corresponding latent factor. The factor loadings provide insights into how well each item measures its corresponding latent factor. Higher factor loadings indicate a stronger association between the item and the construct. Researchers use these estimates to evaluate the quality and validity of the measurement model in CFA and make decisions about item retention, construct refinement, or model improvement.

Table 5
Confirmatory factor analysis

Items		Estimate
Socinf1	Social Influence	.863
Socinf2		.919
Socinf3		.878
Sysuse1	System Usefulness	.786
Sysuse2		.796
Sysuse3		.737
Sysuse4		.739
Faccon1	Facilitating Conditions	.759
Faccon2		.715
Faccon3		.783
Faccon4		.757
Trust1	Trust	.844
Trust2		.859
Trust3		.894
Trust4		.402
Trust5		.829
Hedmot1	Hedonic Motivation	.851
Hedmot2		.919
Hedmot3		.909
Hedmot4		.901
Risk1	Risk	.874
Risk2		.887
Risk3		.890
Risk4		.889
Att1	Attitude	.829
Att2		.852
Att3		.877
Att4		.850
Int1	Intention to Use	.844
Int2		.878
Int3		.847

4.3 Structural Equation Model (SEM)

The structural equation model was used to assess the study hypotheses in the literature review after examining the initial measurement scales for validity and reliability (SEM). Considering the absence of normality of the variables (Mardia Coefficient = 722.99; critical ratio, CR = 301.83), we opted for the maximum likelihood estimation method and bootstrapping technique for 200 consecutive steps or samples, and a significance level of 95%. The SEM analysis of the structural model yielded the following fit indexes: $x2(988) = 1036.915$ ($p < .001$), $x2/df. = 309$, CFI = .923; IFI = .924; NFI = .900. Such indexes exceed the minimum recommended thresholds, thus indicating appropriate model fit, and supporting that this model is appropriate to predict adoption of NFC-MP.

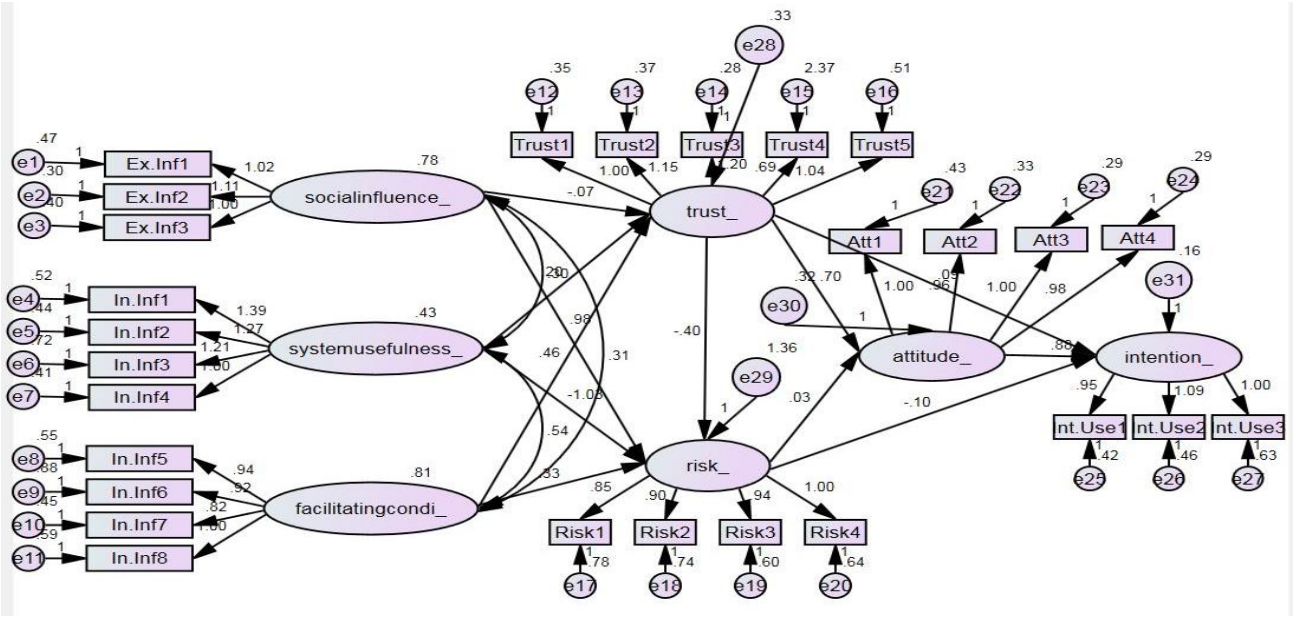

Fig.3. Structural Model

The information includes the estimated values for several fit indices and the results of the chi-square test. Table 6 shows GFI (Goodness of Fit Index): The estimated value for GFI is .774. To assess model fit, it is generally desired to have a GFI value greater than 0.9. In this case, the estimated value falls below the desired cutoff, indicating that the model does not fit the data particularly well according to the GFI criterion. AGFI (Adjusted Goodness of Fit Index): The estimated value for AGFI is .725. Like GFI, it is desirable for AGFI to be above 0.9 for a good model fit. However, in this case, the estimated value falls below the desired cutoff, suggesting that the model does not fit the data well according to the AGFI criterion. NFI (Normed Fit Index): The estimated value for NFI is .900. To have a good model fit, it is typically expected for NFI to exceed 0.9. In this case, the estimated value meets the desired cutoff, indicating a reasonable fit according to the NFI criterion. IFI (Incremental Fit Index): The estimated value for IFI is .924. Like the other fit indices, an IFI value above 0.9 is generally desired for a good fit. In this case, the estimated value meets the desired cutoff, suggesting a reasonable fit according to the IFI criterion. CFI (Comparative Fit Index): The estimated value for CFI is .923. Again, a CFI value greater than 0.9 is typically desired for a good model fit. In this case, the estimated value meets the desired cutoff, indicating a reasonable fit according to the CFI criterion. χ2 (Chi-Square) Test: The chi-square test evaluates the discrepancy between the observed and expected covariance matrices. The calculated χ2 value is 1036.915, with degrees of freedom (df) equal to 309. The p-value associated with this test is .000, which is less than the conventional significance level of .05. This suggests that the model significantly deviates from the observed data, indicating a poor fit according to the chi-square criterion.

Table 6
SEM Results

	Estimated value	**Standardized coefficients**
GFI	.774	GFI>0.9
AGFI	.725	AGFI>0.9
NFI	.900	NFI>0.9
IFI	.924	IFI>0.9
CFI	.923	CFI>0.9
$X^{2=}$1036.915, df=309, p=.000		

Based on the information provided, the model appears to have mixed-fit results. While some fit indices, such as NFI, IFI, and CFI, suggest a reasonable fit, others, such as GFI and AGFI, indicate that the model does not fit the data particularly well. Additionally, the significant chi-square test further suggests a poor fit. It is important to consider all these indices collectively and in the context of your specific research question or hypothesis.

Table 7
Correlations

Construct	Social Influence	System Usefulness	Facilitating Conditions	Trust	Risk	Attitude	Intention	AVE
Social Influence	1							0.636955739
System Usefulness	0.273529	1						0.506137786
Facilitating Conditions	0.151321	0.8464	1					0.461908331
Trust	0.030276	0.322624	0.378225	1				0.413083853
Risk	0.165649	0.007921	0.016384	0.058081	1			0.507002122
Attitude	0.151321	0.481636	0.467856	0.412164	0.015129	1		0.655670512
Intention	0.1444	0.597529	0.525625	0.373321	0.084681	0.743044	1	0.542836604

The underlined values represent the average variance extracted (AVE) values for each latent construct. Table 7 shows, the AVE value for the Social Influence construct is 0.636955739, indicating that approximately 63.7% of the variance in Social Influence is accounted for by its indicators. The correlation coefficient between System Usefulness and Facilitating Conditions is 0.8464, suggesting a strong positive correlation between these two constructs.

The correlation coefficient between Trust and Attitude is 0.412164, indicating a moderate positive correlation between these constructs. The AVE value for Intention is 0.542, suggesting that approximately 54.3% of the variance in Intention is explained by its indicators. The correlation matrix provides information about the relationships between pairs of constructs, indicating whether they are positively or negatively correlated. The AVE values offer insights into the amount of variance in each construct that is accounted for by its indicators. These values help assess the reliability and validity of the measurement model.

4.4 Hypotheses Testing

Based on the acquired data, we undertook statistical analysis to analyze consumers' adoption and acceptance of Mobile payments (MPs). The effect of the six indicated parameters (system usefulness, social influence, facilitating conditions, trust, risk, hedonic incentive, and attitude) on the likelihood of future usage of Mobile payments (MPs) was estimated using structural equation model.

Table 8
Results of the hypotheses testing

Hypothesis	**Relationship**	**S.E**	**C.R**	**p**	**Result**
H1	Social influence → Intention to use	.076	2.619	.009	Supported
H2	System usefulness →Intention to use	.241	1.903	.057	Supported
H3	Facilitating conditions →intention to use	.046	1.081	.280	Rejected
H4	Hedonic motivation →intention to use	.078	7.647	.000	Supported
H5	Trust→Intention to use	.163	-2.432	.015	Supported
H6	Risk→Intention to use	.029	-3.452	.000	Supported
H7	Attitude→Intention to use	.101	.8668	.000	Supported

To test the proposed model and hypothesized relationships for their statistical significance, a bootstrapping procedure with 2000 resamples was used. The results illustrate that some of the proposed hypotheses are confirmed whereas some are not.

5. Discussion

Proximity mobile payments (MPs) in Uzbekistan have created much debate, however, have not been broadly utilized. The essential goal of this examination was to look at the consumer acceptance of proximity Mobile payments (MPs) across Uzbekistan in the light of the TAM with newly included factors. System usefulness, Risk, social influence, hedonic motivation, trust, and attitude were among the influencing factors. The applicable existing writing was incorporated into the estimating scales. Preliminary testing was done in a small pilot study, and certain adjustments were made. The findings of this study are critical to understanding the variety of consumer attitudes toward mobile payments (MPs). To the best of my insight, we are among the principal who attempted to give occasion to feel qualms about light this theme and test determinants of the consumer acceptance of proximity mobile payments (MPs) for mobile payment services in Uzbekistan. As demonstrated by the outcomes, a standout amongst the most considerate hypothetical findings is that trust has the best effect on the intention to utilize mobile payments (MPs). Consequently, keeping in mind the end goal to consider receiving mobile payments benefits, individuals must observe them to be lined up with their current behavioral examples. This is a vital finding since perceived trust is not a piece of the first TAM. It additionally resounds with the aftereffects of Schierz, Schilke [14] which found that trust is a solid determinant of behavioral intention. Lu, Yang [35] additionally found that trust has an extraordinary significance for understudies, as understudies tend to shape their MP administrations reception expectations principally by considering their related social picture. As indicated by the study results, the system usefulness of MP services emphatically influences clients' intention to utilize Mobile payments (MPs). Purchasers are prone to receive another method for installment on the off chance that it gives considerate included esteem. These outcomes are by comparative reviews on MP reception [2, 23]. Another crucial factor in customers' acceptance of mobile payments (MPs) with the social influence, which has a no impact on using mobile payments (MPs). Therefore, it might be inferred that reference groups play a crucial role in the diffusion of mobile payments (MPs) and that clients of mobile payments (MPs) are influenced by their friends when making decisions. This is consistent with many reviews' findings [7, 9, 47]. Additionally, this research underlines the importance of risk in the plan to use mobile payments (MPs); it is consistent with the findings of the previous research [7, 55]. Although we discovered a negative correlation between this measure and the desire to use mobile payments (MPs), the association was not as strong apparently, giving the subjective standard, convenience, and likeness more weight. It distinguishes apart from the findings of other assessments on mobile payments (MPs), where risk has increased as a notable impediment to mobile payments recognition [18, 23]. As indicated by past research studies, the proposed exact model is by [7, 35, 72] approaches, for the most part, are appended to perceived risk and trust due to the significance. Furthermore, this attitude positively affects the expectation to utilize mobile payments (MPs). As per the findings, attitude sets up a semi-noteworthy association with the goal of utilizing [14, 40] among youthful clients and an immaterial one among more established clients.

Interestingly, the study discovers no evidence of a quantitatively meaningful connection between the facilitating conditions around mobile payments (MPs) and the intention to use mobile payments (MPs). Given this, we can assume that the current study did not assist the traditional TAM. The results of this investigation are unreliable in light of the more significant portion of mobile payments (MPs) studies, where facilitating conditions were discovered to be the main factor influencing consumer mobile payments (MPs) usage [1, 55, 75]. Given that most respondents in the statistics are often

young people, this result is predicted (from 20 to 40 years of age). This generation regularly has more involvement with new technology; in this way facilitating conditions is not a difficulty. The other conceivable purpose behind this fizzled speculation is that MP technologies have been changed by the level of an average client. Along these lines, perceived facilitating conditions are not considered as a major test of the client's potential. E-commerce has emerged as a crucial instrument for businesses of all sizes across the globe, serving not only to sell products to clients but also to actively involve them. Currently, conventional enterprises are allocating significant financial resources towards the development of mobile applications and electronic commerce. [7, 8, 108-109].

6. Conclusions

Our study developed a comprehensive theoretical model to analyze consumer intentions to use mobile payments (MPs) in Uzbekistan. The model, grounded in the Technology Acceptance Model (TAM) and augmented with constructs of trust and risk, was empirically validated. The findings indicate that Social Influence, System Usefulness, Hedonic Motivation, Trust, Risk, and Attitude significantly affect the intention to use mobile payments (MPs), while Facilitating Conditions does not. This study provides valuable insights into the factors influencing mobile payments (MPs) adoption and highlights the importance of addressing these variables to enhance user acceptance.

Firstly, the study showed that mobile payments (MPs) service providers should consider six variables: social influence, system usefulness, the facilitating conditions, hedonic motivation, trust, risk and attitude towards the intention to use Mobile payments (MPs). Secondly, the tangible impact of trust on the intention to utilize mobile payments (MPs) has important ramifications for advertising specialists. A potential procedure in marketing could create commercials considering an in-vogue, inventive, tech benevolent era of people, purchasers who covet the adaptability that Mobile payments (MPs) give. Thirdly, with the end goal for clients to use mobile payments (MPs), mobile payments (MPs) ought to be composed and created to give an additional incentive to the client. Value could be upgraded by offering less mind-boggling MP administrations. Fourthly, building the source believability of social data is critical to enhancing correspondence drives that raise the distinction related to mobile payments (MPs) use. Fifth, one authoritatively intriguing understanding can be picked up from the positive effect of the system used on the intention to utilize mobile payments (MPs) arrangements in the future. Not all mobile payments (MPs) clients know that they have a similar level of security on versatile payment accounts on the off chance that it is financed with a credit, charge, or bank financial record, as with standard ledgers [4]. The relevant elements, for example, trust and the social influence, alongside system usefulness, more strongly affect shoppers than specialized elements, for example, attitude.

7. Limitations and Future Research

The study had a relatively limited sample size and was concentrated on a narrow demographic, mostly young people between the ages of 20 and 40. Therefore, the findings may not accurately reflect the general. Subsequent research should strive to incorporate a broader range of participants to improve the applicability of the results. Furthermore, longitudinal studies have the potential to offer a more profound understanding of the progression of consumer acceptance towards mobile payments (MPs) over some time. By expanding the research to include comparative studies with other nations, it is possible to illuminate cultural and environmental differences in the adoption of mobile payments (MPs). The study did not test non-Internet clients including the elderly and the PC unskilled portions of the population.

Future research ought to reveal more insight into how different elements influence consumers' goal to utilize mobile payments (MPs) for mobile payment services by a bigger example of the

Uzbekistan population. The sixth limitation is identified with testing one specific kind of mobile payments (MPs) (Proximity MPs). A few respondents may be involved with MP techniques other than proximity mobile payments (MPs) and may give answers in light of these encounters. Noting the inquiries in view of other mobile payments (MPs) techniques would bring about irrelevant data, as this review is analyzing proximity mobile payments (MPs) only. Further research could be led with a specific end goal to discover the obstructions to Mobile payments reception.

8. Theoretical and Managerial Implications

8.1 Theoretical Implications:

The study exploring the effect of the antecedents of intention to use mobile payment services contributes to the theoretical understanding of factors influencing consumers' adoption of mobile payments. By examining the interplay between using MP and other antecedents, the study sheds light on the complexities of consumer decision-making in the context of mobile payments. The study contributes to the existing theories of technology acceptance, such as the Technology Acceptance Model (TAM), by introducing other contextual factors as a contributing factor. This extends the theoretical framework by considering the role of pleasure-seeking motives in shaping individuals' attitudes and intentions towards mobile payment services. This study enhances the current body of research by incorporating other variables, such as trust, hedonic incentive, and social impact, into the Technology Acceptance Model (TAM). The results highlight the crucial importance of trust in the acceptance of Mobile payments (MPs), indicating that future theoretical frameworks should include trust as a fundamental element. The lack of considerable influence from favourable conditions poses a challenge to the standard assumptions of the Technology Acceptance Model (TAM), suggesting that these notions need to be reevaluated in the context of contemporary mobile technology. This study provides evidence that the perception of risk and social influence plays a significant role in determining the acceptability of mobile payments. These findings are consistent with and build upon earlier studies in this area.

8.2 Managerial Implications:

The findings emphasize the significance of establishing consumer trust in MP systems for practitioners and policymakers in Uzbekistan. The findings suggest that influencing factors into mobile payment services can enhance consumers' intention to use. Managers should focus on designing user-friendly interfaces, personalized features, and interactive functionalities that provide enjoyable and satisfying experiences. Gamification techniques, rewards, or social elements can be employed to create engaging and pleasurable interactions with the mobile payment platform. Targeting influencing factors in Marketing Campaigns: Managers should consider highlighting the benefits and experiences associated with mobile payment services in their marketing efforts. Emphasizing the convenience and efficiency aspects alone may not be sufficient to attract and retain users. Marketing messages and campaigns should emphasize the enjoyment, fun, and excitement that users can derive from using mobile payments. Companies ought to allocate resources toward implementing strong security measures and adopting transparent communication techniques to mitigate consumer apprehensions over potential threats. In addition, marketers should utilize social influence by pushing Mobile payments (MPs) through influencers and social networks to increase adoption rates. Recognizing that young people have greater ease and familiarity with emerging technology, specific marketing initiatives might be directed towards this age group, with a progressive expansion of efforts to include older users. Ultimately, businesses must prioritize highlighting the tangible advantages and additional worth of Mobile payments (MPs) to foster greater adoption and approval. The study suggests that the impact of antecedents on intention to use mobile payment services varies based on

individuals' age level (like Facilitating conditions was not significant to young users but can be influential to other age group people). Managers should tailor their strategies and offerings to different consumer segments.

Author Contributions

Conceptualization: T.K and M.F.I., M.B.H; Data curation: M.U.K., M.F.I., B.M.A and T.K.; Formal analysis: M.U.K., M.B.H and T.K.; Investigation: L.V., M.F.I., M.B.H and B.M.A, Software: M.U.K., T.K., M.B.H., and M.F.I.; Methodology: L.V., M.F.I., T.K., and M.B.H; Project administration: L.V., M.F.I. and B.M.A.; Validation: B.M.A. and M.B.H; Visualization: M.U.K., M.F.I,.T.K, and B.M.A.; Writing – original draft: T.K and M.F.I; Writing, review and editing– M.F.I., M.B.H.; Funding Acquisition: M.F.I.; Supervision: L.V., and M.B.H

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Data Availability Statement

The dataset analyzed during the current study is available from the corresponding author on reasonable request.

Conflicts of Interest

The authors declare that they have no conflict of interest.

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