




“Factors affecting usage of mobile payments by youth in Kazakhstan”

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FACTORS AFFECTING USAGE OF MOBILE PAYMENTS BY YOUTH IN KAZAKHSTAN

Abstract

Mobile payments are developing at a rapid pace in the modern world, affecting most areas of business, economics, and consumer life. Mobile payment services in Kazakhstan have emerged recently driven mostly by young and tech-savvy consumers. The current study applies the modified Technology Adoption Model to investigate the factors that influence the usage of mobile payments by young consumers in Kazakhstan. The data were collected from 351 respondents through an online survey using a structured questionnaire. The results of the multiple regression analysis revealed that perceived usefulness, perceived ease of use, transaction security, and trust are important determinants of mobile payment usage intention. These findings call for improvements in the technological development of mobile payment services to deliver usefulness, ease of use, and security, as well as marketing communications to build trust. On the other hand, no support was found for the effects of usage cost and availability of alternatives on behavioral intention to use mobile payments in Kazakhstan.

Keywords

perceived usefulness, perceived ease of use, transaction security, perceived trust

JEL Classification

D12, L81, L86, O33

INTRODUCTION

The recent development of financial technology and the penetration of mobile devices have converted payment methods from cash and card payments into mobile transactions in many countries of the world. Innovative payment technologies and specifically mobile payments are developing in Kazakhstan as well. The Association of Financiers of Kazakhstan reported that in September 2019 card payments outrun cash payments (Sagir, 2019). Since mobile payments over QR-codes were launched in 2017 in Kazakhstan (Telecompaper, 2017), Kazakhs have been gradually choosing mobile payments over traditional cash and card payments. However, the penetration of m-payments is relatively low in comparison with more developed markets. As young and tech-savvy consumers represent a substantive segment of the market of mobile payments, the key goal of this paper is to explore the factors affecting the usage of mobile payments by more technologically savvy young generations in Kazakhstan.

1. LITERATURE REVIEW

The wide adoption of mobile devices among consumers has allowed users to make payments and transfer money between individuals that introduced an emergent payment method known as Mobile Payment Services (Jung et al., 2020) or m-payment. With the development of cashless technologies, various definitions of mobile payments have emerged in academic literature. In gener-



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Conflict of interest statement:

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al, mobile payments can be defined as a service to provide users with the ability to initiate, authorize, and complete financial transactions in which money is transferred over a mobile network or wireless communication technologies through the use of a mobile device (Jung et al., 2020, p. 2). Mobile payments can be further classified into three main groups: a) person-to-person mobile payment, b) mobile proximity payment, and c) mobile in-app payment (Jung et al., 2020). Mobile proximity payment (MPP) is a contactless payment that uses Near Field Communication (NFC) or similar technologies that use radio waves to make transactions by exchanging payment information between mobile devices and point of sale. The benefit of using mobile proximity services is the convenience for consumers, as they do not need to always carry cash, payment cards, and even a wallet. To investigate user acceptance of mobile payments, two well-established theories are often applied, specifically Innovation Diffusion Theory (IDT) and Technology Acceptance Model (TAM).

With the rapid growth and continuous development of new technologies, the adoption of mobile and contactless payment remains a critical area of investigation. The modern research on technology adoption has taken roots in seminal studies on technology diffusion by individuals and organizations (Rogers, 1976, 1995; Davis, 1989; Cooper & Zmud, 1990). The diffusion concept as defined by Rogers (1995, p. 5) is the process by which innovation is communicated through certain channels over time among members of a social system. The diffusion of innovation includes four major components: the technological innovation itself, innovation rate of adoption, diffusion, and communication. Some innovations can be adopted more quickly than others because of such characteristics as a relative advantage of innovation, its complexity, and compatibility, along with trialability and observability of innovation (Rogers, 1995). Rogers' framework predicts that characteristics of the innovation itself, adopter characteristics, and social factors determine the speed of technology adoption. The IDT framework was applied in a range of studies on mobile payment adoption such as mobile banking (Al-Jabri & Sohail, 2012; Yeh, 2020) and QR code payment (Lou et al., 2017; Suebtimrat & Vonguai, 2021).

Another stream of research examined the relationship between attitudes and intentions. The Theory of Planned Behavior (Ajzen, 1991) postulates that an intention predicts the actual performance of the behavior. According to this model, subjective norms and attitudes influence behavioral intentions, which affect actual behavior. An attitude is made up of beliefs an individual has about the results and consequences of a particular behavior. Subjective norms are defined as the person's evaluations of the way how people important to him/her would feel he or she should behave (Liska, 1984). Applying to the context of mobile and contactless payments, this theory predicts that an intention of using mobile payments derived from attitudes towards behavior, which is influenced by perceived usefulness of m-payments and perceived ease of use of this technology. As the behavior is influenced by social norms, even having a favorable attitude to the adoption of mobile payments, consumer behavior will be shaped by suitability to the industry and distribution channel to comply with their beliefs. A substantial body of recent publications uses modifications of the Technology Acceptance Model framework to study mobile payment services. The extended model with four other factors, namely Perceived Transaction Convenience, Optimism, Personal Innovativeness, and Perceived Transaction Speed, was applied to study QR code payment in the retailing sector (Yan et al., 2021). A modified Technology Acceptance Model with one additional variable – perceived security – was proposed to study digital payment adoption in hospitality businesses (Nuryyev et al., 2021). Studying determinants of wearable payment adoption in Kuwait, Rabaai and Zhu (2021) modified the technology acceptance framework by adding four variables, namely trust, perceived security of wearable payment, perceived cost of using technology, and attractiveness of alternative payments.

2. AIMS AND HYPOTHESES

Centered on the review of existing literature, the Technology Acceptance Model was chosen for this study to examine factors that influence the usage of mobile payments by young generations in Kazakhstan. After inspecting the present literature on mobile payment adoption, the model was mod-

ified with additional variables, specifically the security of using mobile payments, trust, alternative payment methods, and usage cost. Constructed on the technology acceptance framework, perceived usefulness of technology and perceived ease of use are considered as the main factors relevant to the adoption of m-payments. As defined by Venkatesh and Davis (2000, p. 187), perceived usefulness is the extent to which a person believes that using the system will enhance his or her job performance. Perceived usefulness in the setting of mobile payments can be detailed as the degree to which users believe that this technology is useful and help individuals to accomplish task-related goals, for instance, to be more efficient and effective in making payment for goods and services. Perceived ease of use is defined as the degree to which a person believes that using a particular system would be free of effort (Davis, 1989, p. 320). In the mobile payment services context, perceived ease of use can be detailed as an extent to which individuals believe the efforts needed to exercise mobile payment services are low.

Both constructs, perceived usefulness and perceived ease of use, were demonstrated to be important factors in predicting behavioral intentions in various settings, such as the use of m-wallet payments (Fosso et al., 2021; Rabaai, 2021), mobile commerce applications (Ngubelanga & Duffett, 2021; Varzaru et al., 2021), e-payment services (Alswaigh & Aloud, 2021). Butt et al. (2021), Jung et al. (2020), Ramli et al. (2021), and Zhang et al. (2012) demonstrated that trust in technology and security of using this technology are important factors predicting individuals' technology acceptances. Perceived trust affects the willingness of an individual to accept mobile payment services. Perceived trust in the context of online transactions can be defined as an attitude of confident expectation in an online situation of risk that one's vulnerabilities will not be exploited (Corritore et al., 2003, p. 740). In comparison with traditional cash payment methods, mobile payments raise greater security concerns such as the fear that personal banking information might be tracked by unauthorized users. Security can be detailed as an extent to which people think that using an m-payment service is safe and secure (Rabaai & Zhu, 2021). Perceived security is related to feelings that consumer personal credentials will not be used by unwanted parties. Shin and Lee

(2021) stated that trust and security are the two bases for credibility, which in turn influences mobile wallet adoption. In addition, the availability of alternative payment methods and payment method preferences were found to be related to switching behavior when multiple payment systems are available (Pham & Ho, 2015; Ren-Zong, 2020; Tounekti et al., 2021). Compared to available alternatives, mobile payment services provide more benefits, including minimized costs (Abdul-Halim et al., 2021). If there are no price benefits (Pal et al., 2020; Wei et al., 2021) and the actual cost of using mobile payment is greater than the expected cost, this mobile payment service is perceived by consumers as being not cost-effective leading to the unwillingness of consumers to pay for a digital transaction (Choi et al., 2020; Seetharaman et al., 2017).

According to the literature review, this study aims to examine factors that influence the usage of mobile payment services by young consumers in Kazakhstan. Namely, the paper investigates whether perceived usefulness of mobile payments, perceived ease of use, perceived trust in mobile payment services, transaction security, availability of alternatives, and usage cost influence mobile payment usage intention. Centered on this framework and research objectives, six hypotheses were specified for this study:

- H1: *Perceived usefulness is related to mobile payment behavioral intention.*
- H2: *Perceived ease of use is related to mobile payment behavioral intention.*
- H3: *Perceived trust is related to mobile payment behavioral intention.*
- H4: *Security is related to mobile payment behavioral intention.*
- H5: *Availability of alternatives is related to mobile payment behavioral intention.*
- H6: *Usage cost is related to mobile payment behavioral intention.*

The paper further defines methods used in this study, discusses empirical results, and, finally, provides conclusions.

3. METHODS

A quantitative survey method was applied to analyze factors affecting the usage of mobile payments by youth in Kazakhstan. The scales for the study were adapted from Davis (1989), Pal et al. (2020), Pham and Ho (2015), Rabaai and Zhu (2021), and Venkatesh and Davis (2000). The scale items were double translated and then adapted and modified after a pilot test. The recommendations for an international study of Craig and Douglas (2006) were implemented in the process of translation and modification of the items. Seven-point Likert-type scales were applied to measure the constructs. The questionnaire consisted of items measuring perceived usefulness, perceived ease of use, trust, transaction security, availability of alternatives, usage cost, and behavioral intention; it also included a section with demographic questions.

Online contact method and snowball sampling technique were applied to collect data because of coronavirus pandemic restrictions. As this study focuses on youth, an invitation to take part in the online survey was delivered to the initial group generated by university directories with a proposal to share the survey link with their networks. With no incentive offered for participation, the response rate was relatively low. The final sample consisted of 351 completed questionnaires. The characteristics of the sample are demonstrated in Table 1. The sample consisted of about 60% females and 40% males. The age of participants varied from 18 to 26. Their income was represented as 65.2% – average, 23.9% – above the average, and 10.8% – below the average.

Table 1. Sample characteristics (*n* = 351)

Characteristic	Type	Percentage
Gender	Male	40.5% (142)
	Female	59.5 % (209)
Age	18-20	34.5% (121)
	20-23	39.0% (137)
	24-26	26.5% (93)
Income	Below average	10.8% (38)
	Average	65.2% (229)
	Above average	23.9% (84)

4. RESULTS

Principal component factor analysis with a varimax rotation was applied, as suggested by Kline (2011), to confirm the factors and estimate the fit of the measures. All items produced high loadings (more than 0.5) and were used for the analysis where seven factors accounting for 74.4% of the total variance were extracted. Table 2 shows the item loadings and reliability measures. With the KMO measure of sampling adequacy of 0.92 (higher than the threshold level of 0.5), the present sample can be applied for factor analysis. The Cronbach's alpha was applied to check the reliability of scales. For all scales, the values of Cronbach's alpha were higher than the threshold level of 0.7 (DeVellis, 2011). Additionally, Composite Reliability (CR) and Average Variance Estimate (AVE) were used to estimate validity. CR ranged from 0.82 to 0.91, which is higher than the recommended level of 0.8, and AVE values for all constructs were higher than the threshold level of 0.5 (Netemeyer et al., 2003).

Table 2. Constructs, items, loadings, and reliability measures

Construct	Items	Loadings	CR	AVE	Cronbach's alpha
Perceived Usefulness	PU1	0.842	0.865	0.714	0.931
	PU2	0.859			
	PU3	0.835			
Perceived Ease of Use	PEOU1	0.727	0.896	0.541	0.799
	PEOU2	0.777			
	PEOU3	0.741			
	PEOU4	0.695			
Trust	TRUST1	0.881	0.875	0.783	0.866
	TRUST2	0.901			
	TRUST3	0.874			
Transaction Security	TS1	0.775	0.828	0.540	0.711
	TS2	0.643			
	TS3	0.779			
Available Alternatives	ALT1	0.692	0.911	0.650	0.691
	ALT2	0.851			
	ALT3	0.798			
	ALT4	0.872			
Cost	COST1	0.906	0.879	0.813	0.907
	COST2	0.908			
	COST3	0.892			
Behavioral Intention	BI1	0.686	0.862	0.707	0.918
	BI2	0.909			
	BI3	0.909			

To test the hypothesized relationship, a regression model with Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Perceived Trust

(TRUST), Transaction Security (TS), Available Alternatives (ALT), and Cost (COST) as independent variables and Behavioral Intention (BI) as the dependent variable was applied. The adjusted R square of 0.424 produced a good model fit.

The regression analysis results are demonstrated in Table 3. Descriptive statistics are presented in Table 4. The results of the regression analysis demonstrate that, of the six factors proposed in the present study, only four factors produced a statistically significant relationship with behavioral intention to use m-payments. Perceived usefulness has a statistically significant relationship ($p < 0.001$) with behavioral intention to use mobile payment services. Thus, *H1* is supported. The PU mean of 4.93 (highest among all variables) indicates that respondents evaluate quite high usefulness of mobile payment methods. Perceived ease of use is significantly positively related ($p < 0.001$) to behavioral intention to use m-payments that supports *H2*. Perceived trust and transaction security are also significantly related to behavioral intention ($p = 0.025$ and $p = 0.004$ respectively) that provides support to *H3* and *H4*. However, available alternatives and usage costs were not proved to be significantly related to behavioral intention to use mobile payments ($p = 0.587$ and $p = 0.113$ respectively). Therefore, *H5* and *H6* were not supported.

The analysis of estimates (see Table 3) and analysis of means (see Table 4) indicate that perceived usefulness is the most important factor predicting mobile payment usage, followed by perceived ease of use, transaction security, and perceived trust.

Table 3. Hypotheses testing

Hypotheses	Linkage	Est (p-value)	Result
Hypothesis 1	PU → BI	0.362 (< 0.001)*	Supported
Hypothesis 2	PEOU → BI	0.300 (< 0.001)*	Supported
Hypothesis 3	TRUST → BI	0.111 (0.025)*	Supported
Hypothesis 4	TS → BI	0.155 (0.004)*	Supported
Hypothesis 5	ALT → BI	0.029 (0.587)	Not supported
Hypothesis 6	COST → BI	-0.073 (0.113)	Not supported

Note: * means significant at $p < 0.05$.

Table 4. Mean comparison for constructs

Construct	Mean*	Std. Deviation
Perceived Usefulness (PU)	4.9354	1.73359
Perceived Ease of Use (PEOU)	4.8362	1.55019
Perceived Trust (TRUST)	4.3181	1.51073
Transaction Security (TS)	4.7512	1.60835
Availability of Alternatives (ALT)	2.8981	1.39468
Usage Cost (COST)	1.9810	1.69152
Behavioral Intention (BI)	4.6410	1.77593

Note: * based on seven-point Likert-type scales (1 = strongly disagree to 7 = strongly agree).

5. DISCUSSION

The findings of this study partially confirm the results found in the literature. Perceived usefulness of mobile payments and perceived ease of use were demonstrated to be important determinants of users' behavioral intentions in this study. This confirms the findings of a substantial body of studies in different contexts, specifically in m-wallet payments (Alswaigh & Aloud, 2021; Fosso et al., 2021; Rabaai, 2021), mobile commerce applications (Ngubelanga & Duffett, 2021), and mobile payment adoption (Shankar & Datta, 2018). The results confirm that the Technology Acceptance Model, with its main constructs perceived usefulness and perceived ease of use, is a strong framework to predict users' behavioral intentions to adopt new technology and this model can be successfully used in the context of the mobile payment services.

The findings show that perceived trust and transaction security are related to the behavioral intention to use mobile payments. This is in line with other studies on mobile payment service usage showing a positive significant relationship between perceived trust and behavioral intention and security and intention in various settings (Butt et al., 2021; Jung et al., 2020; Nuryyev et al., 2021; Shin & Lee, 2021). These findings have value for practitioners in developing mobile payment products. It is important to build trust and credibility in the provider of m-payment services. Additionally, with the development of technologies, there might be high risks of cyber-attacks and using personal information by non-authorized individuals. Though Latupeirissa et al. (2020) reported the lack of support that security and trust are significant determinants of the acceptance of e-wallet technology,

the results of this study and the majority of the past studies suggest that providers of mobile payments need to develop systems to ensure transaction security.

While Rabaai and Zhu (2021) and Seetharaman et al. (2017) reported a significant effect of the attractiveness of alternative payment methods on intention to use wearable payments, availability of alternatives was not found significant in the present study. This finding can be related to the level of development of payment technologies in Kazakhstan. At this stage, there are not so many alternatives available on the market except for cash and cards. The results related to the usage cost stated that cost

was not found to be significantly related to the behavioral intention to use m-payments. This finding confronts previous studies indicating that cost influences adoption of mobile payments. This contradiction can be explained by the current state of mobile payment development in Kazakhstan. Due to high competition, banks offer various benefits in the form of bonuses and cashbacks, therefore mobile payments are considered as low cost and even price beneficial. However, banks need to be aware that when price benefits will be eliminated, according to Pal et al. (2020) and Wei et al. (2021), consumers will switch to cash or card because it is simple, fast, and costs nothing to a customer (Seetharaman et al., 2017, p. 122).

CONCLUSION

The present study aims to examine factors that affect youth's behavioral intention to use mobile payments in Kazakhstan. The analysis reveals that perceived usefulness, perceived ease of use, transaction security, and perceived trust are significant predictors of mobile payment usage among youth. These results are in line with prior studies on mobile payment adoption in other countries and contexts. The findings indicate that perceived usefulness is the most important factor predicting intention to use mobile payment. These findings imply that the high levels of usefulness, ease of use, and transaction security would help mobile payment service providers to keep existing customers and attract new ones. While these three aspects of the m-payments require mostly technical development, another aspect, which is perceived trust, calls for both operational excellence and effective marketing communications to build trust and credibility among existing and prospective users of a specific mobile payment service.

The results of the present study lack support that usage cost and availability of alternatives are significant factors influencing the intention to use mobile payments. At the current stage of the development of mobile payments in Kazakhstan, there are not many alternatives available and the usage cost is low. However, if the situation change offering more alternative payment methods or increased cost of using mobile payments, these two variables will need further attention from both practitioners and academics to determine their impact on behavioral intention.

The paper is the first empirical study that investigates the intention to adopt mobile payments among young consumers in Kazakhstan. The modified Technology Acceptance Model served as a ground for the proposed model of the study. The results have practical value for understanding factors influencing the adoption and usage of mobile payments in designing marketing communications to penetrate the market of existing mobile payment services and for launching new technologies.

The present study has some limitations. Data were collected during the COVID-19 pandemic that could have possibly influenced the outcomes of this analysis. Only four additional variables were used to modify the Technology Acceptance Model framework. Future studies can modify the Technology Acceptance Model framework by incorporating additional variables to capture specific effects. Only young consumers were sampled for this study. Other demographic groups, especially older individuals, can exhibit different behavior and even resistance to using m-payment services. Therefore, future studies can target a broader sample with more represented sociodemographic factors.

AUTHOR CONTRIBUTIONS

Conceptualization: Liza Rybina.
 Data curation: Liza Rybina.
 Formal analysis: Liza Rybina.
 Funding acquisition: Liza Rybina.
 Investigation: Liza Rybina.
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 Visualization: Liza Rybina.
 Writing – original draft: Liza Rybina.
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