FACTORS INFLUENCING DIGITAL PAYMENTS ADOPTION BY THE PAKISTANI CITIZENS

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Abstract. *The purpose of this research is to empirically examine the factors that influence consumers' adoption of digital payments in a developing country i.e. Pakistan by employing information systems theory. A better understanding of these factors can help policy-makers to determine which policy instruments they can use to increase the adoption of digital payments. We use an extended technology acceptance model to empirically examine the factors affecting consumer's adoption towards digital payments. A survey was conducted to collect data. A simple random sample technique was used. The data was analyzed using Variance-based Structural Equation Modeling (VB-SEM) which is the Partial Least Squares (PLS) technique, in Smart PLS 3.0, to test the formulated hypotheses. Results show that performance expectancy, grievance redressal, and facilitating conditions are the predictors of behavioral intention whereas behavioral intention is the predictor of user behavior. Interestingly, a 62.6% variance in behavioral intention and 55.9% in use behavior of digital payments has been found. Future researchers should investigate the adoption of digital payments on a large population to find concrete evidence and greater insights.*

Introduction

With the emerging use of technology, digital payment is not meeting the initial expectations of its significant growth over online/electronic payment methods

in the United States and Canada (Accenture, 2015). The reasons behind its slow growth and less success have been coded as intensive competition between system providers (Liébana-Cabanillas & Lara-Rubio, 2017), users trust, system complexity (Qin et al., 2017), security and privacy concerns (Kadhiwal & Zulfiquar, 2007), and adoption of these systems by the consumers (Yu, Kywe, & Li, 2018), to name a few. However, from the context of Pakistan, the problem is that adoption of digital payments is insignificant despite fast-growing internet professionals (Saeedi, 2019). The successful adoption of digital payments by the consumers encounters several drivers of human, organizational and/or technological nature (Aslam, Ham, & Arif, 2017; Liébana-Cabanillas & Lara-Rubio, 2017; Oliveira, Thomas, Baptista, & Campos, 2016; Yu et al., 2018). Such drivers prevent its widespread proliferation in society and its adoption by the citizens successfully. Therefore, it is necessary to carry in-depth research on the factors that affect the adoption of digital payments by consumers. Moreover, a lack of research on this phenomenon hindered the gain of in-depth insights and understandings. Therefore, this research attempts to fill the gap in knowledge and practice by examining the factors that influence consumers' adoption of digital payments by employing the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh, Morris, Davis, and Davis (2003). The UTAUT model is extended by adding three more factors relevant to the context that may give a better understanding of the influencing factors on the adoption of digital payments among consumers. Moreover, the addition of three more factors i.e. leadership, grievance redressal, and cost in the model will provide a substantial understanding of influencing factors and hence, make a novel contribution to the adoption studies.

Development of Model and Hypotheses

A UTAUT is employed as a lens to examine the influencing factors of the adoption of digital payments. However, significant additions in UTAUT have been made to capture the broader spectrum (see Figure 1). Moreover, we need to ensure that our framework is applicable in the context of citizens' adoption of digital payments in Pakistan.

Performance Expectancy (PE): Performance Expectancy is described as the degree to which a citizen believes that using digital payment methods will assist him or her in accomplishing improvements in job performance". *H1: PE has a positive influence on BI to use digital payments.*

Effort Expectancy (EE): Effort expectancy is described as the level of simplicity associated with the use of digital payment methods. *H2: EE has a positive influence on BI to use digital payments.*
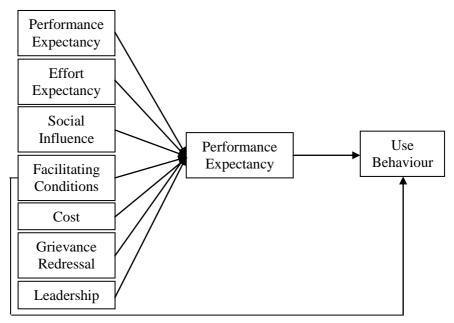
Figure 1.   Proposed Research Model

Social Influence (SI): Social influence is described as the degree to which a citizen perceives that important others believe that he or she should use digital payment methods. *H3: SI has a positive influence on BI to use digital payments.*

Facilitating Conditions (FC): Facilitating conditions factor is described as the level to which a citizen believes that an organizational and technical infrastructure is available to support the use of mobile payment methods. *H4: FC has a positive influence on the use of digital payments.*

Leadership (LDR): Leadership is described as citizens' beliefs or acts in providing help or giving training to others. *H5: LDR has a positive influence on BI to use digital payments.*

Grievance Redressal (GR): Grievance Redressal is described here as an initiative or mechanism to address the disputes between a citizen and a service provider". *H6: GR has a positive influence on BI to use digital payments.*

Perceived Cost (CO): Perceived Cost is described as the extent to which a citizen believes that using mobile payment methods will cost money.*H7: CO has a negative influence on BI to use digital payments.*

Behavioral Intention (BI): Behavioural intention is described as the likelihood of a citizen being involved in using mobile payment methods. *H8: BI has a positive influence on using digital payments.*

Use Behaviour (UB): Use Behaviour is defined as "the intended purpose an individual uses the mobile payments".

Method

A questionnaire was designed by adapting scales from previous studies to examine the research question. The items of the questionnaire were based on previous studies in which they had already been used and tested. These studies included (Abrahão, Moriguchi, & Andrade, 2016; Benmessaoud, Kharrazi, & MacDorman, 2011; Kumar, Adlakaha, & Mukherjee, 2018; Liu et al., 2019; Oliveira et al., 2016; Venkatesh et al., 2003). A survey was undertaken to get an understanding of the influencing factors on the adoption of digital payments. The data collection process was not outsourced rather the data was collected through self-administered online and offline questionnaires. This questionnaire had a primary dichotomous question, where the respondents were asked if they were aware of digital payments in Pakistan. Only the respondents answering 'Yes' could continue with the rest of the questionnaire. A total number of 58 respondents participated in this survey whereas the data collection took place one month long. The questionnaire was divided into two parts including demographic questions and questions about all the other constructs/factors. Respondents were asked to mark their level of agreement against each question based on seven-point scales ranged from "Extremely Disagree" to "Extremely Agree". A small introduction about digital payments was presented before the respondents to give them a more clear understanding of it. The digital payments in question were Keenu Wallet, SimSim Wallet, PayMaxDigital-Wallet, EasyPaisa, JazzCash, ZongPayMax, TimePay, uPaisa, UBL Omni, Alif, EOBI Pension Wallet, BISP, Foree Paisa, MCB Lite, and Jcash, Konnect. A UTAUT theory was extended to determine the factors which influence the adoption of digital payments.

The questionnaire was also comprised of ordinal questions concerning age, education, occupation, mobile type, frequency of use, etc. No extrinsic incentives or reward scheme was introduced to the respondents to increase the participation in this survey except a voluntary will. Since 100% of respondents of this survey were well-educated, this suggested a high degree of competency to answer the questionnaire. Therefore, we are confident with the suitability of respondents for this study.

We employed the Variance-based Structure Equation Modeling (VB-SEM) i.e. Partial Least Squares (PLS) technique to evaluate both the measurement

and structural models. For this purpose, we used the statistical software SmartPLS 3.2.8. Moreover, a simple random sampling technique was adopted to collect data from citizens.

Findings

Of the study population, 75% are males and 25% are females. A major chunk of respondents (82.1%) are 25-39 years old. However, there are no participants who are below 25 years and above 54 years old. Moreover, the qualification level of all the participants is at least 'Graduation'. A huge percentage i.e. 57.1% of the participants are using digital payments from 1-4 years long, followed by 35.7% who are using digital payments from less than 1 year long. Only 7.2% of citizens are using digital payments from more than 6 years long.

Table 1. *Mobile Payment Methods*

#	Digital Payment Methods	Frequency-wise
1	Easy Paisa	11
2	Jazz Cash	11
3	Konnect	5
4	UBL Omni	2
5	uPaisa	1
6	MCB Lite	1
7	Jcash	1

The citizens were asked about the type of mobile payment methods you are using. They were allowed to select more than one option since they are using more than one payment method. Out of 16, so far, digital payments, most of the citizens are using Easy Paisa and Jazz Cash methods followed by Konnect, UBL Omni, uPaisa, MCB Lite, and Jcash respectively (see Table 1).

Measurement Model

PLS-SEM comprises of two parts i.e. measurement model and structural model. The measurement model with reflective constructs is determined by performing/employing reliability and validity tests. For reliability checking, Cronbach's Alpha and composite reliability tests are carried out whereas content, convergent, and discriminant validity tests are carried out to check validity. Values of Cronbach's Alpha, composite reliability, content validity, and convergent validity must be greater than 0.6 whereas AVE must be greater than 0.5 for evaluation of structural model (Hair, Hult, Ringle, & Sarstedt, 2017; Nunnally & Bernstein, 1994; Sekaran & Bougie, 2016). Since all the values are greater than the minimum acceptable value, the structural model has

been evaluated to test the hypotheses. The outer model is consisting of factor loadings of each item. Table 2 shows the values of Cronbach's Alpha, composite reliability, and convergent validity known as AVE. Table 3 shows the discriminant validity (based on the recommended criteria: recommended by Hair et al. (2017), of measuring discriminant validity using the Heterotrait-Monotrait Ratio (HTMT). All the values are within the range of threshold values to proceed with further analysis.

Table 2.   *Cronbach's Alpha, Composite Reliability and AVE statistics*

Constructs	Item Code	Factor Loadings	Cronbach's Alpha	Composite Reliability	AVE
Behavioral Intention	BI1	0.814	0.86	0.902	0.697
	BI2	0.901			
	BI3	0.855			
	BI4	0.763			
Perceived Cost	CO1	0.62	0.716	0.846	0.653
	CO2	0.894			
	CO3	0.88			
Effort Expectancy	EE1	0.859	0.812	0.887	0.725
	EE2	0.926			
	EE3	0.762			
Facilitating Conditions	FC1	0.873	0.909	0.936	0.785
	FC2	0.906			
	FC3	0.917			
	FC4	0.846			
Grievance Redressal	GR1	0.71	0.604	0.787	0.559
	GR2	0.61			
	GR3	0.895			
Leadership	LDR1	0.826	0.879	0.925	0.805
	LDR2	0.931			
	LDR3	0.931			
Performance Expectancy	PE1	0.718	0.85	0.897	0.687
	PE2	0.794			
	PE3	0.905			
	PE4	0.884			
Social Influence	SI1	0.624	0.708	0.805	0.585
	SI2	0.911			
	SI3	0.731			
Use Behavior	UB1	0.837	0.877	0.925	0.804
	UB2	0.922			
	UB3	0.928			

Table 3.   Heterotrait-Monotrait Ratio (HTMT) statistics

	BI	CO	EE	FC	GR	LDR	PE	SI
CO	0.451							
EE	0.470	0.430						
FC	0.534	0.584	0.384					
GR	0.678	0.742	0.248	0.502				
LDR	0.225	0.417	0.127	0.278	0.446			
PE	0.720	0.490	0.464	0.637	0.450	0.354		
SI	0.541	0.679	0.709	0.602	0.465	0.292	0.393	
UB	0.699	0.734	0.566	0.696	0.817	0.345	0.741	0.490

Structural Model

In the structural model, explanatory factors (R^2) and significant values (p values) are the most crucial values to assess the structural model. The values of R^2 having 0.02, 0.13, and 0.26 are categorized as low, medium, and high explanatory variance (Hair et al., 2017). The R^2 value of BI is 0.626 and the R^2 value of UB is 0.559 (see Figure2). It is found that BI and UB do have high explanatory variance.

Table 4.   *Path Analysis and Remarks on Hypothesis*

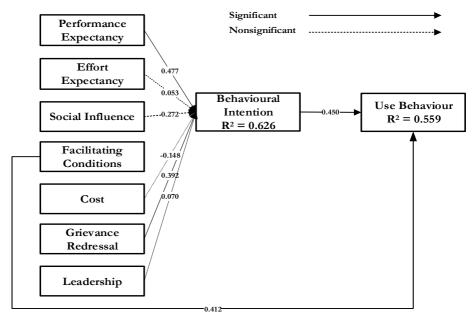| Paths	Path Coefficient	Standard Deviation	*t-* Statistics	*p* Values	Remarks
BI ->UB	0.45	0.15	3.10	0.00	Accepted
CO -> BI	-0.15	0.22	0.68	0.50	Rejected
EE -> BI	0.05	0.20	0.27	0.79	Rejected
FC ->UB	0.41	0.17	2.50	0.01	Accepted
GR -> BI	0.39	0.15	2.59	0.01	Accepted
LDR -> BI	0.07	0.18	0.39	0.70	Rejected
PE -> BI	0.48	0.18	2.67	0.01	Accepted
SI -> BI	0.27	0.23	1.20	0.23	Rejected

Figure 2.   Validated Research Model

The overall structural model of PLS-SEM has been shown in Figure 2. The *p* values less than 0.05 show the significant values and acceptance of hypotheses i.e. H1, H4, H6, and H8 (see Table 4).

Discussion

This study has given an account of predicting citizens' adoption of digital payments. The results have strengthened our confidence in hypothesis that PE, EE, and GR are the significant positive predictors of BI to use of digital payment methods (Abrahão et al., 2016; Aslam et al., 2017; Liu et al., 2019; Oliveira et al., 2016). This study finds that H1 is accepted which reveals that finding performance in digital payment methods builds positive evaluation of mobile payments adoption which is aligned with the previous research conducted by Abrahão et al. (2016) and Liu et al. (2019). Hypothesis H4 is also accepted which indicates that the provided facilities of organizational and technical types influence the citizens' behavioral intention to use mobile payment methods and is also proved in the earlier research study carried out by Alalwan, Dwivedi, Rana, and Algharabat (2018). This study also validates that grievance redressal is significantly and positively influencing citizens' behavioral intention to use mobile payments and hence H6 is also acceptable according to the empirical results. Grievance redressal construct has also a significant positive influence on behavioral intention to use M-wallets in earlier studies (Kumar et al., 2018).

The results are not in good agreement with UTAUT (Venkatesh et al., 2003) at this stage where there are fewer participants. Apart from these disagreements, the results are expected to confirmation of UTAUT theory on a large number of respondents. These results, thus, need to be interpreted with the caution of a limited number of participants. Moreover, our study, certainly, does have a large room for improvements in studying the influencing factors on the adoption of digital payments by increasing the number of responses. Therefore, discrepancies in results may be negligible since the sample size is very small in measuring the determinants of adoption of digital payments.

Conclusion, Limitations, and Future Directions

To sum up, our work has investigated the predictors of adoption of digital payments by employing UTAUT theory since citizens are actual consumers of such methods and the determinants are needed to be investigated using a suitable theory so that adoption can be made successful.

The evidence from this study intimates that the adoption of digital payments is influenced by some factors determined by impacts on citizens' behavioral intention and use behavior. We have obtained satisfactory results proving that PE, FC, and GR have significant positive influences on BI whereas behavioral intention on use behavior of digital payments even though the number of participants is very small. Our study provides a good basis to conduct adoption studies by adding new factors and deriving new relationships relevant to digital payments using the UTAUT theory(Venkatesh et al., 2003). These findings add to a vast growing body of literature on digital payment adoption which is certain implications for the academics and managers.

This study is going on collecting data from citizens on the factors influencing the adoption of digital payments and will provide concrete pieces of evidence upon collecting a large number of responses.

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