A STUDY ACCEPTANCE OF QR CODE MOBILE PAYMENT SYSTEM IN PAKISTAN USING EXTENDED UTAUT MODEL

BY

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ABSTRACT

In the recent times advancement of technology has given an edge towards the real time processing of data and information. The widespread use of smartphones in business development has transformed the way we make payments for our purchases, eventually leading into a cashless society. Smartphones are primarily used as the communication devices, entertainment tool, gadgets for internet access, and now most commonly as a method for payment. People have started making payment for purchase of goods and service using mobile based Quick Response (QR) code technology. QR code Mobile Payment system (MPS) acceptance tendency in developing country such as Pakistan is at slow pace comparing to other developing countries where people are using smartphones as a wallet. The purpose of this study is to investigate and identify the significant factors that affect consumer‘s behavioural intention to use QR code MPS. This study proposed a model to measure the behavioural intention to use QR code MPS in Pakistan. In this study, constructs such as Performance Expectancy (PE), Personal Innovativeness in Information Technology (PIIT), Effort Expectancy (EE), Habit (HA), Social Influence (SI), Compatibility (CO), Facilitating Conditions (FC), Hedonic Motivation (HM), Risk (RK), and Trust (TR) are measured. The hypothetical relationships were examined through Structural Equation Modelling using Smart-Partial Least Squares software. Quantitative methodology is used to investigate the correlational paths between constructs. Using a cluster sampling approach, a total of 401 responses were collected from users. Research findings show that 12 out of 13 hypotheses were found to be statistically significant, only one as insignificant. The findings revealed that 53% variance in behavioural intention (BI) is explained by PE, PIIT, EE, HA, SI, CO, FC, TR, RK and TR. Similarly, 23.2% variance in use behaviour (UB) is explained by HA, FC and BI. Furthermore, this study expands the use of Extended Unified Theory of Acceptance and Use of Technology (UTAUT2) in Information System research, extends and validates the UTAUT2 model within the QR code MPS context. Moreover, the findings of this research are valued to the stakeholders interested in developing and implementing QR code MPS. Potential stakeholders would benefit from an improved and revised understanding of these aspects. The identification of important factors influencing QR code MPS in this study will assist them to develop and implement their system to ensure the full acceptance and use of the QR code MPS particularly in Pakistan.

خلاصة البحث

في الآونة الأخيرة ، أعطى التقدم التكنولوجي ميزة نحو معالجة البيانات والمعلومات في الوقت الحقيقي.أدى الاستخدام الواسع النطاق للهواتف الذكية في تطوير الأعمال إلى تغيير الطريقة التي ندفع بها مقابل مشترياتنا ، مما يؤدي في النهاية إلى مجتمع غير نقدي. تستخدم الهواتف الذكية في المقام الأول كأجهزة اتصال وأداة للترفيه وأداة للوصول إلى الإنترنت ، والآن الأكثر شيوعًا كأداة للدفع.بدأ الناس في إجراء الدفع مقابل شراء السلع والخدمات باستخدام تقنية رمز الاستجابة السريعة المعتمدة على الجوال. ميل رمز الاستجابة السريعة لنظام الدفع بواسطة الهاتف المحمول في البلدان النامية مثل باكستان يسير بخطى بطيئة مقارنة بالبلدان النامية الأخرى حيث يستخدم الناس الهواتف الذكية كمحفظة.الغرض من هذه الدراسة هو استكشاف وتحديد العوامل الهامة التي تؤثر على نية المستهلك السلوكية لاستخدام رمز الاستجابة السريعة .MPS اقترحت هذه الدراسة نموذجًا لقياس النية السلوكية لاستخدام QR code MPS في باكستان في هذه الدراسة ، بنى مثل توقع الأداء (PE) ، والإبداع الشخصي في تكنولوجيا المعلومات (PIIT) ، توقع الجهد (EE)، العادة (HA) ، التأثير الاجتماعي (SI) ، التوافق (CO) ، شروط التسهيل (FC) ، يتم قياس الدافع المتعة (HM) ، والمخاطر (RK) ، والثقة .(TR) تم فحص العلاقات الافتراضية من خلال نمذجة المعادلات الهيكلية (SEM) باستخدام برنامج .Smart-PLS تُستخدم المنهجية الكمية لاستكشاف المسارات الترابطية بين التركيبات. باستخدام نهج أخذ العينات العنقودية ، تم جمع ما مجموعه 401 الردود من المستخدمين. أظهرت نتائج الأبحاث أن 12 فرضية من أصل 13 فرضية كانت ذات دلالة إحصائية ، وفقط واحدة فقط غير ذات أهمية. وكشفت النتائج أن تباين 53 ٪ في النية السلوكية (BI) موضح بواسطة PE و EE و FC و SI و HA و CO و TR و PIIT و .RK وبالمثل ، يتم تفسير التباين 23.2 ٪ في سلوك الاستخدام (UB) من قبل FC ، BI ، و .HA علاوة على ذلك ، توسع هذه الدراسة من استخدام النظرية الموحدة الموسعة للقبول واستخدام التكنولوجيا (UTAUT2)في أبحاث نظام المعلومات (IS) ، وتوسع وتثبت نموذج UTAUT2 ضمن سياق MPS لرمز QR.علاوة على ذلك ، يتم تقييم نتائج هذا البحث لأصحاب المصلحة المهتمين بتطوير وتنفيذ QR code MPS.سيستفيد أصحاب المصلحة المحتملون من فهم محسّن ومراجع لهذه الجوانب. إن تحديد العوامل المهمة التي تؤثر على كود QR MPS في هذه الدراسة سوف يساعدهم على تطوير وتنفيذ نظامهم لضمان القبول الكامل واستخدام QR code MPS.

APPROVAL PAGE

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DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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To my beloved parents, sisters, teachers, friends and family.

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LIST OF ABBREVIATIONS

AGFI	Adjusted Goodness of Fit
ATU	Attitude Towards Using
AVE	Average Variance Extracted
AW	Awareness
C	Perceived Cost
C.R.	Critical Ratio
CB	Covariance Based
CE	Perceived Credibility
CFA	Confirmatory Factor Analysis
CS	Customer Service
df	Degree of Freedom
EM	Estimation Maximization
EMV	Europay, Master Card, and Visa
EN	Enjoyment
ESQ	E Service Quality
F	Familiarity
F2	Effect Size
FT	Finacial Time
GFI	Goodness Fit Index
GS	Government Support
IC	Incentive
ICT	Information and Communication Technology
IDT	Innovation Diffusion Theory
IN	Innovativeness
IQ	Information Quality
IS	Information System
IT	Information Technology
ITM	Initial Trust Model
MCAR	Missing Completely at Random
MNO	Mobile Network Operator
MO	Mobile Operator
MO	Perceived Mobility
MPS	Mobile Payment System
MST	Magnest Secure Transmission
MVA	Missing Value Analysis
NFC	Near Field Communication
O2O	Online to Online
OBT	Offline Brand Trust
OSSQ	Online Shopping Service Quality
OTP	On Time Password
PBC	Perceived Behavioural Control
PC	Personal Characteristics
PDA	Personal Digital Assistant
PLS	Partial Least Squares
PO	Personality Openness

POS	Point of Sale
PP	Playfulness
PRISM	Pakistan Real-Time Interbank Settlement Mechanism
PT	Propensity to Trust
Q2	Predictive Relevance
QR	Quick Response
R2	Cooeffecient of Determination
RA	Reliability Assurance
RFID	Radio Frequency Identification
SA	Structural Assurance
SE	Secure Element
SEM	Structural Equation Modeling
IVR	Interactive Voice Response
SIM	Subscriber Identity Module
SMS	Short Message Service
SPSS	Statistical Package for Social Sciences
SUT	Stress to Use a Technology
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reason Action
TTF	Task Technology Fit
UBL	United Bank Limited
UTAUT	Unified Theory of Acceptance and Use of Technology
UTAUT2	Extended Unified Theory of Acceptance and Use of
VS	Variety of Service
WAP	Wireless Application Protocol
WD	Website Design
WIM	Wireless Idenity Module

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

In Traditional payment methods we are largely confined to the utilization of physical coins and currency notes. The introduction of credit cards seemed to have eliminated the necessity for any further technologies, as this saved time, and introduced a convenient way of paying for goods and services. The future of payment technology and methods had been revolutionized by a card with a personalized identification number, magnetic strip and in some cases a readable chip. Mobile cellular devices became such an intricately vital aspect of daily existence that the proposed idea of utilizing them as a payment method caused worldwide hype and excitement.

Various payment methods through mobile devices are currently on the market. Some of these includes; Direct Mobile Billing (K. S. Staykova and J. Damsgaard, 2015). Short Messaging Service (SMS) based payments or transactions, Near field communication (NFC) and Mobile Web Payments (WAP). To put it simply, In the recent times advancement of technology has given an edge towards the real time processing of data and information. The widespread use of smartphones in business development has transformed the way we make payments for our purchases, eventually leading into a cashless society. Smartphones are primarily used as the communication devices, entertainment tool, gadget for internet access, and now most commonly as a method for payment. People have started making payment for purchase of goods and service using mobile based Quick Response (QR) code technology. Despite its number of advantages, the acceptance of QR Code or QR Scan as a payment method is or not so impressive. Consumer looks for convenience, usefulness and benefits over the

existing payment systems in order to decide whether they would adopt or reject the QR code as a payment method.

The system of QR Code has gained popularity in comparison of other standards barcodes because it can be read very quickly and has efficient storage space. QR code is a two-dimensional code consisting of

black and white module squares on a white background that is read by smartphone cameras, point-of-sale (POS) readers and other devices. A QR code corresponds to a particular matrix barcode and easily readable. The encoded information generally is in form of text, alphanumeric numbers, URL or other data which is encoded in the QR code, The QR code structure is shown in the Figure1. Furthermore, QR code consists of a number of features, for example large capacity data encoding, resistant from damage and dirt, reading at high speed, diminutive size of print out, 360 degree reading and structural flexibility of application (Alhafi, R, 2019; Mishra & Mathuria, 2017).

Figure 1.1 Structure of QR code

Implementation of this technology makes the customer transactions much faster and efficient. In recent years a vast number of traders, stakeholders and banks in Pakistan are in agreement towards adoption of QR code technology and bringing it in use. The idea of not holding cash and or credit cards for transactions persuades the

business of inviting the technology as replacement, which is deemed are easier and more convenient, by simply a scan reads all the information on the smart device for transaction of payments.

Digital payments and QR codes are gaining ground in Pakistan, through the Pakistan Real-Time Interbank Settlement Mechanism (PRISM). “During the second quarter of FY18, 0.4 million transactions amounting to Rs 93.6 trillion were processed by Pakistan Real-Time Interbank Settlement Mechanism (PRISM),” stated SBP’s ‘Payment System Review-2QFY18’. “The average value of paper-based transaction has increased as against previous quarter, which shows that for small transactions, people prefer e-banking channels,” said the report (S. Rochemont, 2019)

It is still the advent of QR code technology in Pakistan; it can penetrate various market sectors in lieu of the technology as a success worldwide resulting in greater than before usage among the customers (PTA, 2019). Pakistan being one of the dominating countries among the smartphone users, it is still in the preliminary and accomplishment stage. In spite of the QR code technology for payment is steadily inclined towards acceptance globally.

In context of Pakistani youth population which is reflected in the figure 1.2 which reflects the utmost interest for the QR code technology for payment. The ease of use when combined with added security has encouraged the Pakistan population to a greater extent. Hence it can be interpreted that an alternate method for payment is desired.

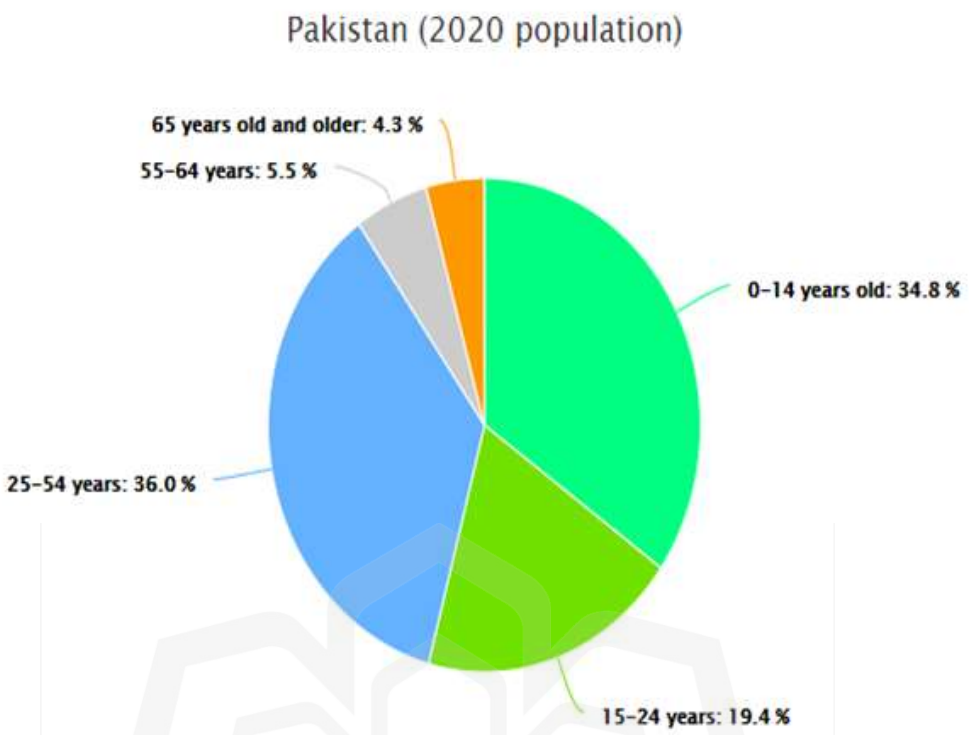

Figure 1.2 Population of Pakistan (Pakistan Bureau of Statistics 2019)

After looking into the keenness towards an alternate mechanism for payments, with dexterous execution and roll out features, the QR code MPS is going to be widely acknowledged within the different trading sectors of Pakistan. As the technological aspect is unable to guarantee its acceptance and successful implementation by Pakistan users. Hence the motivation for current research is to measure the motivational factors as to the usage and acceptance of the technology and use of technology. According to Pakistan telecommunication authority 2019, 162M cellular and 72M 3G/4G subscribers. In addition, 3M basic telephone and 74M broadband subscribes in Pakistan. Number of mobile subscribers are shown in figure 1.3.

Figure 1.3 Pakistan Telecommunication Authority, PTA, 2019

Although lots of research models have been developed by researchers to investigate and understand the acceptance and use behaviour of the end users. Extended Unified Theory of Acceptance and Use of Technology (UTAUT2) theory was developed in year 2012 to understand consumer acceptance and use of technology. (Venkatesh, 2012) suggested testing UTAUT2 on different technologies and countries, as the constructs incorporated in UTAUT2 are to find acceptance and use of technology in a consumer context. Thus, to understand consumer‘s adoption behaviour of QR code mobile payment system, this study intends to use some widely tested acceptance and psychology theory such as UTAUT2 and by adding extra constructs available in the literature to understand the acceptance of QR code MPS in the context of emerging economies like Pakistan.

1.2 STATEMENT OF THE PROBLEM

In the advent of technological paradigm the exponential growth of the mobile technologies has opened new avenues for business development and simultaneous contributed in emergence of new technological opportunities to develop business and at

the same time providing services according to the innovation. According to (PTA, 2019), in a recent finding, the Pakistani society and their relation to mobile phones being a key component of their day to day life, it has been found out that 78 % of the present population has ownership of mobile phone.

Hence the extensive usage of mobile phones provides the industry players with an opportunity, so that they can cultivate the service industry which is linked to the mobile device for the practicing users. For illustration, Pakistani banking sector which is practicing the technology based on mobile in order to facilitate the user with their services (Afshan, S., & Sharif, A. (2016). In addition to that, Pakistani retail industry makes this familiarity more easily accessible by introducing the online shopping experience using the mobile technology (Akhlaq, A. and Ahmed, E. 2015).

In a statistics released by the Pakistani Telecommunication Agency the total number of mobile phone users has reached to 160 million users, and in addition 3G/4G usage has subscription to 72 million users in 2019 (State Bank of Pakistan, 2019). In spite of the growth in mobile technology usage, executing the payment mechanism in against of the purchases by using the mobile phones, specifically implementing the QR code MPS is still an unpractised idea which is not being adopted by most of the Pakistani consumers (The Nation, 2019).

Hence, the main concern of this research is to identify factors affecting QR code MPS technology acceptance by Pakistani users. A compound model is being designed, which will pave new inroads in understanding the factors in order to determine the acceptance of QR code MPS technology and eventually enabling the development of profound guidelines and strategies to envision the future of QR code MPS. Consequently, in this process of goal-based filtering we will be exploring, scrutinizing and measuring the possible important factors for acceptance of QR code MPS

technology in Pakistan and then empirically examining the critical factors which will encourage the prospective users from accepting or rejecting the usage of QR code MPS technology.

In additional review of literature keen towards the acceptance of the technology using the Contact free methods of payment along with its services will be further researched in order to support the research scope of acceptance of technology in the current day scenario.

1.3 RESEARCH OBJECTIVES

The study aimed to achieve the following objectives:

1. To identify influential factors that affect acceptance QR code mobile payment system in Pakistan.
2. To develop an integrated model of the determinants to accept QR code mobile payment system based on UTAUT2 model as a foundation.
3. To investigate the relationships among the factors used in the proposed model.
4. To test the validity of the proposed research model using empirical data in a developing economy context i.e., Pakistan's perspective.

1.4 RESEARCH QUESTIONS

1. What are the important factors that influence the acceptance of QR code mobile payment system in Pakistan?
2. How to develop a model of the determinants to accept QR code mobile payment system.