Factors Affecting Consumers' Perception Towards e-Payment Systems in India

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Abstract

Demonetization by Government of India is a well-planned move towards a cashless economy which came as a bonanza for several digital payment platforms. Various mobile wallets and online payment systems are sprouting to reap the benefits of this opportunity. These vibrant payment systems evaporate the importance of cash as the only method of exchange of value. Perception of consumers towards these payment systems is highly important for future growth. This study aims to discover perception of users towards electronic payment (e-payment). Literature review indicates that factors such as usefulness, ease of use, security, trust, and risk significantly affect users' perception. A conceptual model was developed and tested in this study mainly focusing on factors influencing users' perception towards e-payment. A self-administered questionnaire was developed and disseminated to 200 respondents out of which 150 valid responses were considered for further analysis. Cronbach alpha was used to check the reliability of the questionnaire. Exploratory factor analysis was used to extract the variables. Correlation and multiple regression analysis revealed that usefulness, ease of use, and security significantly impact perception of users towards e-payment. However, results for trust and risk are insignificant. It has been found out that there is a great potential for future expansion of such payment instruments and the challenge is to meet the continuously growing expectations of consumers. Several implications can be drawn from the study for both marketing managers and policy makers which help in developing strategies directed at increasing e-payment acceptance, and usage.

Keywords : Benefits,, Consumers' perception, Demonetization, Electronic Payment, Risk, Trust

I. INTRODUCTION

Electronic payment (e-payment) has become a popular method of paying online in a very short span of time. Huge traffic has been recorded on various e-payment platforms post demonetization. Demonetization by Indian government significantly boosted digital transformation for consumers paying cash who switched to downloading payment apps and replenishing their digital wallets. Post demonetization a sudden cash crunch was observed in the country. Aghast consumers are agile enough to find alternative ways of payments. With no option left but to choose cash-less methods to pay, various e-payment service providers recorded a surge in transactions. Millions of frantic consumers who were sceptic and contemplated digital transactions are blazingly converting into digital consumers.

In a very short span of time e-payment systems beckoned a large number of consumers and became a widely used method for all kinds of payments. Lightning speed growth of internet users in India is also fuelling this phenomenon. One of the factors that facilitate the popularity of this payment method is the growth of internet users in India. As on March 2016, there were 342.65 million internet users in India[1]. This number is likely to cross 500 million by the year end [2]. Low cost data services initiated by Reliance JIO further fuelled this phenomenon. The growing number of internet users enabled telecommunication companies and banking institutions to make effective provisions and influenced them to launch e-payment platforms. Various e-payment platforms emerged in order to support the escalating e-commerce transactions [3].Baddeley [4] insisted that the growth of e-commerce depends upon the emergence of effective e-payment systems. Adoption of these latest technologies revamped the life of millions of people around the world [5]. Factors including usefulness and ease of use are the main contributors towards the adoption of information technology [6].

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Lim, Lee,and Kurnia [7] defined e-payment as a payment mechanism that expedites e-commerce transactions between organizations or individuals in a secure environment, while Teoh, Chong, Lin,and Chua [8] defined e-payment as the transfer of an electronic value of payment from a payer to payee through an electronic mechanism which allows customers to remotely access and manage their bank accounts and transactions. E-payment systems varies from simple transactions using magnetic-stripe cards to more complex systems where an online purchasing system can debit existing bank accounts of the purchaser and credit bank accounts of the seller [9]. E-payment includes electronic cash, electronic checks, credit card, stored value card smart cards, and micropayment solutions such as PayPal [10, 7].

Another factor that boosts e-payment systems are the limitations of traditional payment systems. Lack of trust, security, usability, high transaction costs, and perceived risk are the main limitations of traditional payments system[3]. E-payment is designed to benefit consumers mainly in terms of convenience and low transaction cost [8]. In e-payment, security and trust are the major concerns that are widely discussed by large number of academicians[11, 5, 3,12, 8]. Haque et al.[5] insisted that privacy and security of customer information and transactions are the major obstacles in the development of banking industry. Another major reason that dilutes consumer trust in e-payment is the lack of direct engagement which increases the risk of losing personal information and hacking of credit card details [3].

In view of the above discussion, the main question addressed in the study was to inspect the critical factors that affect consumer perception towards e-payment systems. It was expected that the results of the study would provide significant insights on e-payment adoption behaviour of Indian consumers. Further findings would permit identification of various factors that are imperative in formulating policies to promote e-payment in India. It is implied that methodology and findings obtained will assist future research on e-payment adoption behaviour in nations similar to India.

The remainder of this article is structured as follows. Next section presents a brief review of literature of prior research, followed by a discussion of conceptual framework and hypothesis to be tested. The methodology used in the study is described next. The data collected were analyzed and interpreted before the final discussions and implications. Finally, results and implications for future research and practice are discussed.

II. REVIEW OF LITERATURE

Large number of researchers tried to scrutinize the e-payment system from a technical and user acceptance perspective [13, 10, 24, 5, 8, 3, 12, 14]. Large numbers of factors have been identified by various researchers that clout consumers' perception towards e-payment. Several studies view security as one of the major concerns regarding e-payment [5, 3, 14]. Trust in e-payment systems was found be to more important than security, but both are essential for e-payment adoption [7]. Some other studies reveal that benefits and ease of use are the important factors influencing the perception of consumers towards e-payment [13, 5, 3, 12, 14, 8]. Lichtenstein and Williamson [15] insisted that convenience is the main motivator while, Rouibah [10,12] found enjoyment as one of the most important factors influencing consumers' intention to use e-payment. Risk perception is another factor that affects consumers' attitude towards e-payment. Chou [10] examined thirteen variables that influence the performance of a payment system which include security, reliability, non-repudiation, latency, transaction completeness, costs, monetary convertibility, customer base, peer to peer payment, anonymity, privacy, convenience, and merchant acceptance.

Review of existing literature revealed that very few studies tried to study these factors in a single setting [5, 3, 8] and all these studies were conducted outside India. It has been found that the concept of e-payment is new in India and is less academically researched. Therefore, there is ample opportunity to study usefulness, ease of use, security, risk and trust in a single study. It is interesting to look at perception of Indian customers towards e-payment.

A.Usefulness

Convenience and low transaction cost are the main benefits that consumers received from e-payment[10, 8]. Özkan et al. [3] insisted that e-payment usage reduces the need of paperwork and bills can be paid anytime and anywhere. Usefulness increases when the systems are widely available and additional benefits such as, localization or loyalty schemes are offered [21]. The only reason that deferred the slow diffusion of the e-payment is the lack of communication of benefits to the potential users [14]. Easy currency convertibility and peer to peer payment are some other benefits of e-payment [10]. We follow the above results by considering that the adoption of e-payment increases when benefits increase in

comparison to costs. Based on above studies, the following hypothesis was stated for this study:

H_1: There is significant relationship between usefulness and consumers' perception towards e-payment

B.Ease of use

Complexity in using e-payment is one of the major barriers that consumers face [7]. Zmijewska et al. [21] found that when consumers perceive that e-payment methods are easier to use, they are more likely to accept them. Content, design, and speed are the main characteristics that lead in the ease of use and subsequently influence consumers' perception towards e-payment [3, 8]. Clear symbols and function keys, simple steps of payment process, graphic display, and help functions are some key features that make e-payment systems easier to use [14].Chou et al. [10] said that usefulness increases when users spend, store, and transport a currency easily. We followed the above studies and considered that the more intuitive and easier e-payment services, the more positive attitude of customers towards e-payment. Based on the above studies, the following hypothesis was stated:

H_2: There is significant relationship between ease of use and perception of consumers towards e-payment.

C. Security

Security is a set of procedures and programs to protect the details of transactions and customers from internal and external frauds [3, 17]. Haque et al.[5]asserted that security is the most important variable affecting e-payment. Lack of security is one of the major obstacles hindering consumer trust in e-payment and affects the emergence of these systems [13, 10, 7, 20]. Protecting consumers' identity, spending patterns, income sources, system security, and transactions related information are the major concerns related to security [10, 8].Further, more emphasis should be given on virtual money, as the risk is higher as compared to conventional money [4].To determine whether security is a crucial determinant of consumers' perception about e-payment, the following hypothesis can be stated:

H_3: There is significant relationship between security and perception of consumers towards e-payment.

D.Trust

Trust is defined as confidence of consumers that their personal information and money will not be used against their personal interest[3]. Trust became an important factor that influences customers' willingness to conduct e-commerce transactions [22, 19]. Abrazhevich[11] found that customers stop using e-payment systems, which are treacherous. Customer trust can be enhanced by improving e-payment protocol while transacting online [3]. Lim et al. [7] insisted that trust is more meaningful than security. To achieve widespread usage of e-payment, trustworthy systems must be established [11]. To confirm that trust is a crucial determinant of consumers' perception about e-payment, the following hypothesis can be stated:

H_4: There is significant relationship between trust and perception of consumers towards e-payment.

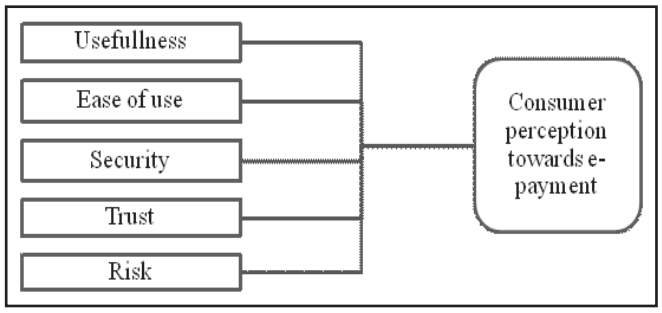
E. Risk

Risk arises when consumers are not sure about the consequences of their purchase decisions [13].Economic risk and privacy risk occurs when customers disclose personal information [3]. Risk is one of the major obstacles in adopting e-payment system [13]. Risk of fraud/theft, hacking, and password stealing are the one that shackle consumers while using e-payment [3]. Haque et al. [5] insisted that risk can be reduced through adequate mechanism, improving technology and sensitivity of ID and Password. Lichtenstein and Williamson [15] considered that risks are manageable through a personal protection strategy including vigilance by taking some responsibility for information security. Based on the above studies, the following hypothesis was stated:

H_5: There is significant relationship between risk and perception of consumers' towards e-payment.

The research framework used in the study is shown in fig. 1. The five independent variables are posited to have significant impact on dependent variables. The next section describes the research methodology adopted in the study.

Fig. 1. Conceptual Framework



Source: Authors' elaboration

III. RESEARCH METHODOLOGY

A. Sampling Method and Respondents' Demographic Information

The study targeted 200 respondents on the basis of convenience sampling technique. 170 respondents filled the questionnaire. The responses were obtained in the month of October and November 2016. In order to ensure accurate findings, 20 invalid responses were eliminated and therefore 150 responses were considered complete and valid for the final analysis. The data was analyzed with the help of Statistical Package for Social Sciences (SPSS) Version 18. Table I shows the demographic profile of the respondents. It indicates that gender composition is almost equal. In terms of age group, majority of respondents are from 19-30 age groups. Almost half of the respondents are undergraduates and 30% possess qualification upto post-graduation.

TABLE I.
DEMOGRAPHIC PROFILE OF RESPONDENTS

	Descriptor	Distribution	Percentile
Age	Less than 18 years	18	12
	19 to 24 years	35	23.33
	25 to 30 years	32	21.33
	31 to 36 years	28	18.67
	37 to 42 years	22	14.67
	43 years or older	15	10
Gender	Male	78	52
	Female	72	48
Education	High School	22	14.67
	Undergraduate	69	46
	Postgraduate	45	30
	Doctorate, Professional	14	9.33
Occupation	Student	42	28
	Employed	92	61.33
	Unemployed	16	10.67

Source: Authors' elaboration

B. Survey Instrument

To answer the research questions, primary data was collected by using a self- administered questionnaire. A questionnaire based on research model was developed and used in the study. The questionnaire was divided into two parts.The first part focused on respondents' demographic data, such as age, gender, education, and occupation. The second part solicited 18 five-point Likert scale type questions ranging from "Strongly Disagree" (1) to "Strongly agree" (5) for measuring the main constructs of the study; i.e. usefulness, ease of use, security, trust, risk, and consumers perception toward e-payment. The items were adapted and later modified from different studies, i.e. Usefulness [3, 8, 14], Security [3, 8], Trust [8], Ease of use [3], and consumers perception toward e-payment [8]. Table II shows means and standard deviation scores of each measurement item under various constructs. Consumer perception towards e-payment scores high mean among independent variables, majority of the respondents agreed that the main reason for using e-payment are usefulness, followed by ease of use, security, trust, and risk. Standard deviations of majority of statements are below 1.00 indicating consistencies in respondents' answers.

C. Reliability and Validity Analysis

In order to ensure validity, the questionnaire was piloted on 20 respondents. Some questions were eliminated and wording of some questions was changed. To check the construct validity of the questionnaire, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was used. Results shown in table III indicate that the sampling adequacy for all the variables is above 0.60, therefore, making it suitable for factor analysis [18].With Eigen values over 0.7 and total variance explained at 77.57%, five independent factors have emerged. Factor loadings of all variables are over 0.50. The dependent variable emerged with 0.810 KMO measure and 74.324% of total variance explained. Content (internal) validity is satisfied with the fact that this study is based on extensive relevant literature and researchers employed extensive amount of time to frame the measurement items by using relevant literature.

In addition, reliability was assessed by using the most common test of measuring the internal consistency of a scale i.e. Cronbach α. A value of 0.70 or greater is considered to be an indicator of high scale reliability. The Cronbach α score for six constructs are shown in table III. All values are higher than 0.60 (cut value point in social studies) which implies excellent reliability.

IV. DATA ANALYSIS AND INTERPRETATION

Table IV shows Pearson correlation coefficient results between all independent variables and dependent variable. Table IV shows moderate correlation between the independent variables (0.118 to 0.578). Further, all

TABLE II.
MEASUREMENT ITEMS SHOWING MEAN AND STANDARD DEVIATION SCORE

Construct	Items	Mean	S.D.
Usefulness	Electronic payment system is a useful mode of payment.	4.33	0.890
	Electronic payment system saves my time and cost.	4.45	0.890
	Speed of electronic payment system is faster than traditional payment system.	4.43	0.932
Security	I am concerned about my security when using an electronic payment system.	3.76	1.125
	I will stop using electronic payment system if I come to know about any breach in security.	3.79	1.082
	Matters of security have significant influence on me while using an electronic payment system	4.11	0.879
Trust	I trust the ability of an electronic payment system to protect my privacy.	3.83	0.906
	I trust that an electronic payment system that it will not lead to transaction fraud	3.60	1.053
Ease of Use	Electronic payment system is easy to understand.	3.79	1.119
	I prefer using electronic payment system because it is easier to use.	4.05	0.884
	The electronic payment system is easy to navigate and is user friendly.	3.88	0.900
Risk	Risk associated with electronic payment is higher than traditional payments system.	3.68	1.164
	Others can know/hack/steal information concerning my electronic payment transactions.	3.52	0.950
	The risk of fraud/ theft, hacking, password stealing is high in electronic payment.	3.79	0.949
Consumers'	An electronic payment system is better than traditional payment system.	4.20	0.805
perception	Electronic payments system is much more efficient than traditional payment system	4.08	0.955
towards	Using electronic payment services is interesting	4.07	0.827
e-payment	Given the opportunity, I will use electronic payment in the near future	4.19	0.881

Source: Statements in table II are adapted from "Facilitating the adoption of e-payment systems: Theoretical constructs and empirical analysis,' by S. Özkan, G. Bindusara, and R. Hackne, 2010, Journal of Enterprise Information Management, 23, 305-325. Copyright 2010 by the Emerald Group Publishing Limited.,"Factors affecting consumers' perception of electronic payment: An empirical analysis," by W. M.-Y. Teoh, S. C. Chong, B. Lin, and J. W. Chua, 2013, Internet Research, 23, 465 - 485. Copyright 2013 by the Emerald Group Publishing Limited., "Understanding consumer acceptance of mobile payment services: An empirical analysis," by P. G. Schierz, O. Schilke, and B. W. Wirtz, 200, Electronic Commerce Research and Applications, 9, 209-216. Copyright 2009 by the Elsevier B.V.

TABLE III.
VARIABILITY AND RELIABILITY RATES FOR DEPENDENT AND INDEPENDENT VARIABLES

Measure	Items	Factor Loadings	KMO	Eigen Value	Variance Explained (%)	Cronbach's α
Independent Variables						
Usefulness	3	0.805-0.837	0.832	6.049	43.204	0.898
Ease of use	3	0.769-0.796		1.813	12.951	0.844
Risk	3	0.706-0.860		1.244	8.886	0.759
Security	3	0.697-0.723		0.915	6.535	0.710
Trust	2	0.700-0.764		0.840	5.999	0.782
Dependent Variables						
Consumers' Perception	4	0.782-0.903	0.810	2.973	74.324	0.882

Source: Authors' elaboration

TABLE IV.
CORRELATION BETWEEN VARIABLES

	Perception towards e-payment	Useful	Ease of use	Risk	Security	Trust
Perception towards e-payment	1					
Useful	0.736**	1				
Ease of use	0.506**	0.457**	1			
Risk	0.309**	0.285*	0.118	1		
Security	0.603**	0.594**	0.409**	0.272*	1	
Trust	0.529**	0.578**	0.499**	0.249*	0.559*	1

Note:*, **Correlation significant at 0.05 and 0.01 levels, respectively (two tailed); Source: Authors' elaboration

five independent variables are positively correlated with dependent variable at 0.01 significance level. With the highest coefficient score well below 0.90, the problem of multi-collinearity is deemed to be minimized. This shows high statistical significance among all independent variables.

Table V shows the multiple regression analysis, performed to explore the causal relationship between the variables. Similar to the results of correlation analysis, multicollinearity problem seems to be reduced as the variation inflation factor (VIF) for all the independent variables are well below 10, indicating that the variables can be used for regression analysis.

TABLE V.
MULTIPLE REGRESSION RESULTS BETWEEN INDEPENDENT VARIABLES AND CUSTOMERS PERCEPTION TOWARDS E-PAYMENT

Model	Unstandardized coefficients		standardized coefficients			Collinearity	
	β	*SE*	*β*	*t*	*p*	*Tolerance*	*VIF*
Constant	0.184	0.399		0.462	0.646		
Useful	0.496	0.102	0.502	4.887	0.000	0.530	1.885
Ease of use	0.172	0.088	0.176	1.968	0.049	0.699	1.431
Risk	0.066	0.060	0.087	1.101	0.275	0.895	1.118
Security	0.199	0.100	0.198	1.994	0.050	0.565	1.769
Trust	0.016	0.084	0.019	0.189	0.851	0.544	1.840

Note: F = 21.98 (p = 0.000); r^2 = 0.615

Source: Authors' elaboration

Regression analysis was used to find out which independent variables affect dependent variable. The dependent variable in the study is consumers' perception towards e-payment and independent variables are usefulness, ease of use, trust, security, and risk. The value of r^2 is 61.5% of the variances, and significance values indicate that usefulness, ease of use, and security are significantly associated with consumers' perception towards e-payment. As such, H_1, H_2, and H_4 are accepted. However, risk and trust are not significantly associated with the consumer's perception towards e-payment. Therefore, H_3 and H_5 are not accepted.

V. DISCUSSION

The purpose of the study was to diagnose the factors influencing consumers' perception towards e-payment in India. Results reveal that e-payment is quite popular among Indian consumers and adoption rate is rising at a lightning speed. Reasons behind this exponential growth includes government initiatives towards digitalization, strong security measures taken by banks and various campaigns to encourage consumer towards digital ways to connect to the world. Usefulness, ease of use and security emerge as major components that encourage consumers towards adoption of a faster and more efficient method of payments. The results seem to be consistent with correlation and regression analysis. It has been found out that trust and risk are not significantly associated with consumers' perception towards e-payment.

Overall, with the highest mean, correlation and β values, usefulness was found to be the most important factor affecting consumers' perception towards e-payment. The findings substantiate some previous studies [6, 14, 8] where consumers prefer these systems due to structured transaction process, and speedy nature helps in saving time and cost. Similarly, ease of use is also found to be significantly associated with consumers' perception towards e-payment. User-friendly interfaces, easy accessibility, short and easy steps to complete a transaction are some factors that highlight ease of use among consumers towards e-payment. The results are consistent with prior studies [11, 8]. Installation of internet kiosks and video presentations by some leading banks enhances user friendliness towards e-payment. Similar to usefulness and ease of use, security has been found to be associated with consumers' perception towards e-payment. High mean scores, correlation, and regression analysis validate the findings. The results are consistent with previous studies [23, 3]. Risk averse nature of Indian consumers makes it imperative to pay adequate attention towards security issues. Banking institutions must regularly check their firewall systems and update to the latest technology.

Risk is one of the main factors found to be important from consumers' point of view. However, the current study proved no significant relationship between risk and consumers' perception towards e-payment. Risk generates the lowest mean among all factors. The findings are consistent with prior studies [3]. To enhance security, merchants must use secure transaction technologies, clear navigation sites, and shopping carts [3]. Similar to security, trust is found to be the least influencing factor. Results are in agreement with those of previous studies [12, 8]. Findings reveal that consumers trust the efficiency of e-payment providers that they will protect them from frauds. Due to various technological advancements, frauds are significantly reducing in the present scenario.

VI. MANAGERIAL IMPLICATIONS

The present study provides important implications to marketing managers, banking institutions, e-payment service providers, and government in formulating proper marketing strategies and strengthening consumer experience. E-payment service providers need to understand that trust and risk factors should not be overlooked and efforts should be made to ameliorate trust and win the risk perception battle among consumers. Lack of awareness towards e-payment is the dominant obstacle faced by Indian consumers. To surmount such problems, educational, and promotional campaigns should be conducted concerning security levels and benefits of e-payment.

VII. CONCLUSION

In this study, an attempt has been made to identify key factors influencing perception of Indian consumers towards e-payment. Factors identified from past literature were empirically tested in the study. Multiple regression results indicate that usefulness, ease of use, and security are significantly associated with consumers' perception towards e-payment.It has been found that growth in internet usage and e-commerce significantly influence e-payment. Interestingly, trust and risk are not found to be associated with consumers' perception towards e-payment. The study achieved a significant milestone by limiting the existing gaps in the literature by studying the variables in a single setting. However, usefulness, security, and ease of use are monumental factors that need to be studied independently.

It is concluded that all the factors included in the study are the most important and influence consumers' perception towards e-payment. The study provides an insight into customers' needs which may be essential for policymakers in providing better services. This study can be used for further research in exploring other determinants of customer behaviour towards e-payment.

VIII. LIMITATIONS OF THE STUDY AND SCOPE FOR FURTHER RESEARCH

Current research endeavours to study few critical factors affecting consumer perception towards e-payment. However, several others important factors as cited by previous studies need to be probed. Future studies ought to consider additional meaningful factors such as anonymity, reliability convertibility, efficiency, traceability, and applicability that affect consumers' perception towards e-payment. Another limitation of the study is that it is based on a small sample size.

To enhance the ability to generalize the findings, a large sample size consisting of respondents of various age groups, educational, and social backgrounds need to be considered in future studies. Further, incorporation of demographic variables with findings might reveal some fascinating facts. Some additional statistical tools and techniques can be used to analyze the impact of consumers' adoption behaviour relating to e-payment. Another area which can be investigated includes problems and hurdles faced by consumers while using e-payment. Frequency and type of problems faced by consumers can also be examined. Studies examining the difference between level of consumers' expectations and service provided by e-payment solutions is the need of the hour.

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