

# CASHLESS PAYMENT VS CONVENTIONAL PAYMENT SYSTEM – CONSUMER INFLUENCING FACTORS IN INDIAN CONTEXT

<sup>1</sup>Syed Md. Faisal Ali Khan and <sup>2</sup>Amal Mohammed Sheikh Damanhouri

<sup>1</sup>Department of MIS, Jazan University, Jazan, Ministry of Higher Education, Kingdom of Saudi Arabia,  
Email: [alisyed.faisal@rediffmail.com](mailto:alisyed.faisal@rediffmail.com) Mob: +966531571533

<sup>2</sup>Department of Business Administration, Faculty of Economic & Administration, King Abdulaziz University,  
Jeddah, Kingdom of Saudi Arabia,  
Email: [adamanhori@kau.edu.sa](mailto:adamanhori@kau.edu.sa)

## ABSTRACT:

**Background:** This paper is an effort to analyze cashless payment vs Conventional payment system in India. The current study focuses on the challenges and threats faced by Indian consumers while using digital money. The paper highlights the buying pattern of consumer in context to cashless and conventional payment system.

**Methods:** In the current study theoretical model is constructed reviewing different journals based on cashless as well as conventional payment system. The study evaluates factor effecting purchase decision in light of variables associated with payment mode. Primary as well as secondary data is used for framing the conceptual theory which emphasizes on associating factors for the use of card or cash as medium for purchase. The studies also focus on cashless payment and its impact on consumer. The study is based on quantitative research. The sample size chosen is 500 based on the standard deviation of the pilot study. SPSS 19.0 is used in the current study for the analysis of quantitative data. Reliability analysis is used for measuring consistency of the questionnaire. Correlation test is used to find the association between independent and dependent variables.

**Results:** The study evaluates the most promising factor for payment option in contrast to card and cash.

**Conclusion:** Based on the findings, possible policy recommendation would be suggested for encouraging the use of plastic money.

**Key Words:** Cashless Payment, Conventional Payment System, Organized Retail Stores, Buying Behavior, Electronic Payment System.

## 1.1. INTRODUCTION:

*“A cashless economy is secure, it is clean. You have a leadership role to play in taking India towards an increasingly digital economy” - Prime Minister Shri Narendra Modi*

The Digital India program is a flagship program of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy, but recently the “cashless economy” is increasing as of matter of discussion in the media. It is a matter of debate in our society for several decades now its impacts and implication. However, futurists expect that cashless society will reach a higher degree of acceptance and the cash transaction will expect to decline. But still there are critical issues related to security and privacy associated with cashless payment as a matter of concern in the context to payment [17]. Today Consumers have an opportunity to pay for purchases either by cash or by card. Recently, a conventional payment mechanism like card payment is increasing with the increase of technology as well as the change of lifestyle [5]. During recent years, it has been noticed that new generation like the payment mechanism of smart cards and EPS, which represents a significant proportion of transaction [2]. Consumer now a day’s more likely to choose a credit card for purchasing consumer durable products other than short lived product. In addition to the choice of payment which is either driven simple consideration which is convenience like acceptability, accessibility or habit or it could be accidental like payment made through when sufficient amount is not available in one’s wallet. Some researches proposed that consumer experience psychological pain while paying through cash. Although when credit card is used as a payment instrument the feeling of value loss diminished, but as payment system changes from card to cash the association

changes. This implied that understanding the associations of people with cash is different to those with electronic systems. When dealing with notes and coins the psychological pattern of a consumer differs as expressed while purchasing by electronic system by Snelders, Lea, [14].

In Jan 2016 approx. 571 Million debit card was made available to the residents. Debit cards are hugely popular as compared to credit card. Credit cards are mostly owned by Corporate and Formal sector guys. The present government is promoting the use of debit cards and enabling the cashless payment through POS. It is expected that the card holders will go up considerably by 2020. Less than 1% of the population currently hold credit cards in India. As per data released by the Reserve Bank of India on March 2016, there are approx. 245 million active credit cards issued by Indian Banks.

## 2.1. Literature Review:

### 2.1.1 Initiation of Electronic Payment System

Russell [12], mentioned that until the 1950s that third party cards system was introduced, i) travel entertainment cards and then ii) as bank cards. During the 1960s Visa and MasterCard largely eliminated competition and established a network with the bank credit card industry. In 1970s the use of credit card facilitates exchanges and initiated social comment and research.

### 2.1.2. Buying Behavior in Context to Electronic Payment System

Schmidt and Muller [13], in their study mentioned that there are 3 dimensions in cashless payment, technical which include (security & reliability, scalability and latency), economic which include (cost of the transaction and taxes) and social which include (anonymity, the point-to-point). Whereas, Parhonyi, Nieuwenhuis and Pras [10], mentioned 2 dimensions, technical (ease of use and convenience,

scalability, anonymity, reliability, interoperability, security) and non-technical dimension (privacy concern and security coverage). Venkatesh *et al.* [19] proposed a fundamental model for factors in user technology acceptance where he expressed Individual's reaction to use information technology, which is influenced by actual use of Information technology and individual reaction to use information technology will further lead to Intention to use information technologies. Fishbein and Ajzen [3], proposed the theory of reasoned action which states adoption of new technologies influence user behavior. In the theory attitude and subjective norms influence behavioral intention. Attitude is influenced by behavioral belief supported by outcome evaluation. Subjective norms are influenced by normative belief supported by motivation to comply. Moor and Benbasat [9], proposed perceived characteristics theory that people accept innovations which have a competitive advantage, testable, compatibility, observable, and less complexity. Eastin [1], in his research mentioned factors influencing the adoption cashless payment system are perceived convenience, previous experience, profit confidence and internet use.

### **2.2.3. Impact of Electronic Payment System on Purchase Decision**

Prelec and Simester [11] made an experiment which proved that willingness-to-pay is significantly higher in the credit-card as compared with the cash keeping the other conditions as constant. The previous researches conducted by Loewenstein and Prelec [8] and Soman, [15], stated that the physicality of cash creates an acute awareness that something of value is being transferred. Thaler [18], stated about mental accounting where individual categorize, creates code and then evaluate economic outcomes. He further expressed that people subjectively frame a transaction in their mind to determine the benefits and the degree of satisfaction they expect to receive. Feinberg [2] and Hirschman [6], stated that the use of electronic money increases the propensity to spend more as compared to cash. Feinberg [2], in his study, examined the amount of tips left by card payers and cash paying customers at a restaurant, found that average credit card customers left larger tips. Soman [16], on the other hand examined that those who generally use credit as a mode of payment spends more on purchase as when payment mode changes to cheque.

### **2.3.4. Risk associated with Electronic Payment System**

Gopal *et.al* [4], in their study mentioned that digital piracy is a byproduct of digitalized world. One of the reports ranked India in 2008 as the 14<sup>th</sup> country in the world hosting for phishing websites. The study titled 'Crime Online: cyber crime and Illegal Innovation', states that cyber crime in countries like India, China, Brazil and Russia is a cause of "particular concern" and that there has been a "leap in cyber crime" in India in recent years, which is partly been fuelled by a large number of call centers. The major cyber crimes (PTI, 2009)[7] which is reported in India are the denial of services, defacement of the websites, SPAM, computer virus, Trojan horse, worms, pornography, cyber squatting, cyber stalking and phishing. India's home PC owners are mostly targeted sector of its 37.7 million Internet users. 86% of the total attacks are laid by Mumbai and Delhi.

### **2.3.5. Types of Scam Using Credit/Debit Card:**

Credit card fraud comes in different forms and shapes, including the fraud which involves using a debit and credit card of some description, and others. There are various reasons for payment card fraud. Some frauds are designed to obtain funds from the accounts whereas the other wishes to obtain goods for free. It is a matter of concern that credit card fraud is very closely linked with identity theft. As per Federal Trade Commission, 5% of the people over 16 in US have been or will be the victim of the identity theft. It was found that there had been 21% growth in prevalence of the identity theft in 2008.

#### **2.3.5.1. Types of Card Fraud:**

**(I) Application Fraud-** Application fraud happens when other people apply for credit or a new credit card by your name.

**(II) Electronic or Manual Credit Card Imprints-** This is type of fraud where someone skims the information that is placed on the magnetic strip of the card and use to make a fake card.

**(III) CNP (Card Not Present) Fraud-** A type of credit card scam in which the customer does not physically present the card to the merchant during the fraudulent transaction.

**(IV) Lost and Stolen Card Fraud –** Here, card will be theft or because an individual loses it.

**(V) Card ID Theft –** This happens when the details of the card become known to the criminals.

**(VI) Mail Non-Receipt Card Fraud -** In this case when an individual is expecting a new card or replacement of old card and criminal is able to intercept these.

**(VII) Assumed Identity -** Criminal will use temporary address & false name to obtain the credit card.

**(VIII) Doctored Cards -** A doctored card is a type of card whereby a strong magnet has erased its metallic stripe. Criminals generally do this and then manage to change the details on the card itself so that they match those of valid cards.

**(IX) Account Takeover –** this is the most common forms of credit card fraud where criminals will manage to get hold of all of the information and relevant documents of an individual. This is done while online shopping or another. They will further contact the bank and pretend to be the owner of the card and requesting them to change the address. They will provide the proof of identity and ask to replace the card. Once the bank has confirmed about the identity of the customer they approve the address change request and new card will be sent to the fraud and then the scam begins.

### **3.1. Research Methodology:**

#### **3.1.1. Scope of the Study:**

The research is conducted in India selecting five major cities of Uttar Pradesh including Lucknow, Kanpur, Allahabad, Aligarh, Noida.

#### **3.1.2. Objective of the Study:**

1. To Examine Cashless Payment in Context to Conventional Payment System.
2. To evaluate the influencing factors for choosing the type of payment.
3. To evaluate the risk and measures for protecting the EPS using card.

**3.1.3 Limitation:**

The sample size chosen focus only those who were found shopping in the mall where as rural market was not taken into consideration which limits the research. Only Uttar Pradesh was being targeted whereas other states were not taken into consideration.

**3.1.4. Research Method**

**3.1.4.1. Research Design**

The research is designed in a coherent and logical way, ensuring the problem to be addressed which will constitute the blueprint for data collection its measurement, and analysis of data comprising with data interpretation.

**3.1.4.2. Data Collection**

Primary as well as secondary data is used in this research. Secondary data is collected from government sites as well as from published and unpublished reports whereas primary data is collected by questionnaire and observation.

**3.1.4.3. Population And Sample Size Of The Study**

The formula of Saunders *et al.* decides the range of the least sample.

$$\text{Sample size } n = (ZS/E)^2$$

Where

Z = Standardized value corresponding to a confidence level of 95% = 1.96

S = Sample SD from Pilot study of 50 sample = 0.59

E = Acceptable Error = 5% = 0.05

$$\text{Hence, Sample size } = n = (ZS/E)^2 = (1.96 * 0.59 / 0.05)^2 = 534.90 = 535$$

The minimum sample size based on a 95% confidence interval (z value= 1.96) was found to be 535, rounding off would be 500.

The sample decided were 500 chosen from 5 major cities of Uttar Pradesh as mentioned above. 100 samples were chosen judgmentally who were identified shopping in malls. Convenience sampling was used for filling the questionnaire. 1 Mall is chosen from each city judgmentally.

**3.1.4.4 Questionnaire and Response Rate**

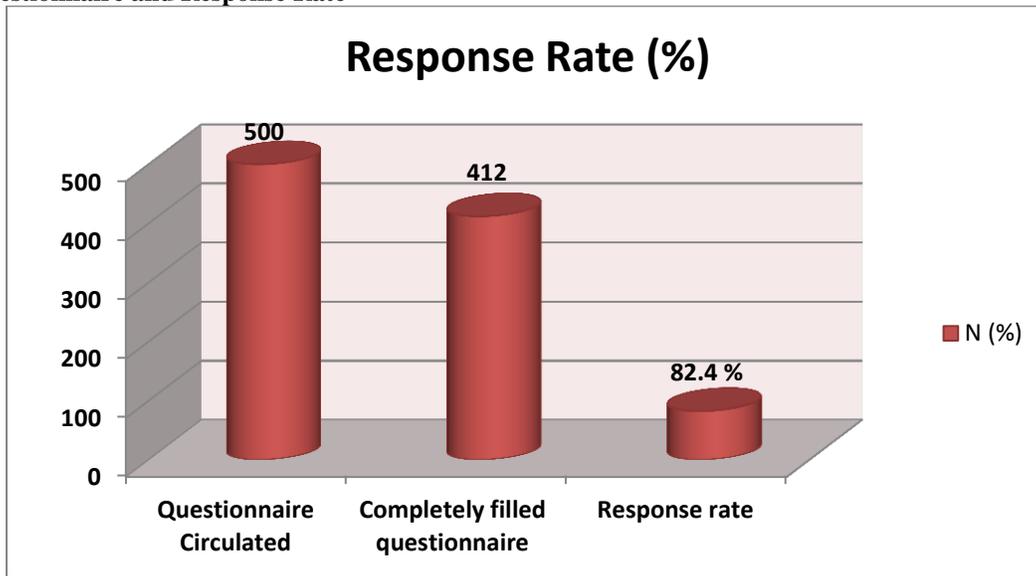


Fig1: Questionnaire and Response Rate

**3.1.4.4. Hypothesis Proposed**

- H0: There is no association between ease of use and type of payment.
- H1: There is association between ease of use and type of payment.
- H0: There is no association between usefulness and type of payment.
- H1: There is association between usefulness and type of payment.
- H0: There is no association between security & privacy and type of payment.
- H1: There is association between security & privacy and type of payment.
- H0: There is no association between exchange & refunds and type of Payment.
- H1: There is association between exchange & refunds and type of Payment
- H0: There is no association between cost and other surcharges and type of payment.

- H1: There is association between cost and other surcharges and type of payment.
- H0: There is no association between mobility and type of payment.
- H1: There is association between mobility and type of payment
- H0: There is no association between confidence and type of payment.
- H1: There is association between confidence and type of payment.

**4.1. Data Analysis and Interpretation**

On 9 Nov 2016 Modi's Government announced demonetization of Rs 500 and Rs 1000 note with a vision to check black money in the economic system. The present government is also trying promoting card transactions to keep record of all transaction to reduce black economy.

**4.1.1 Card Transactions in India**

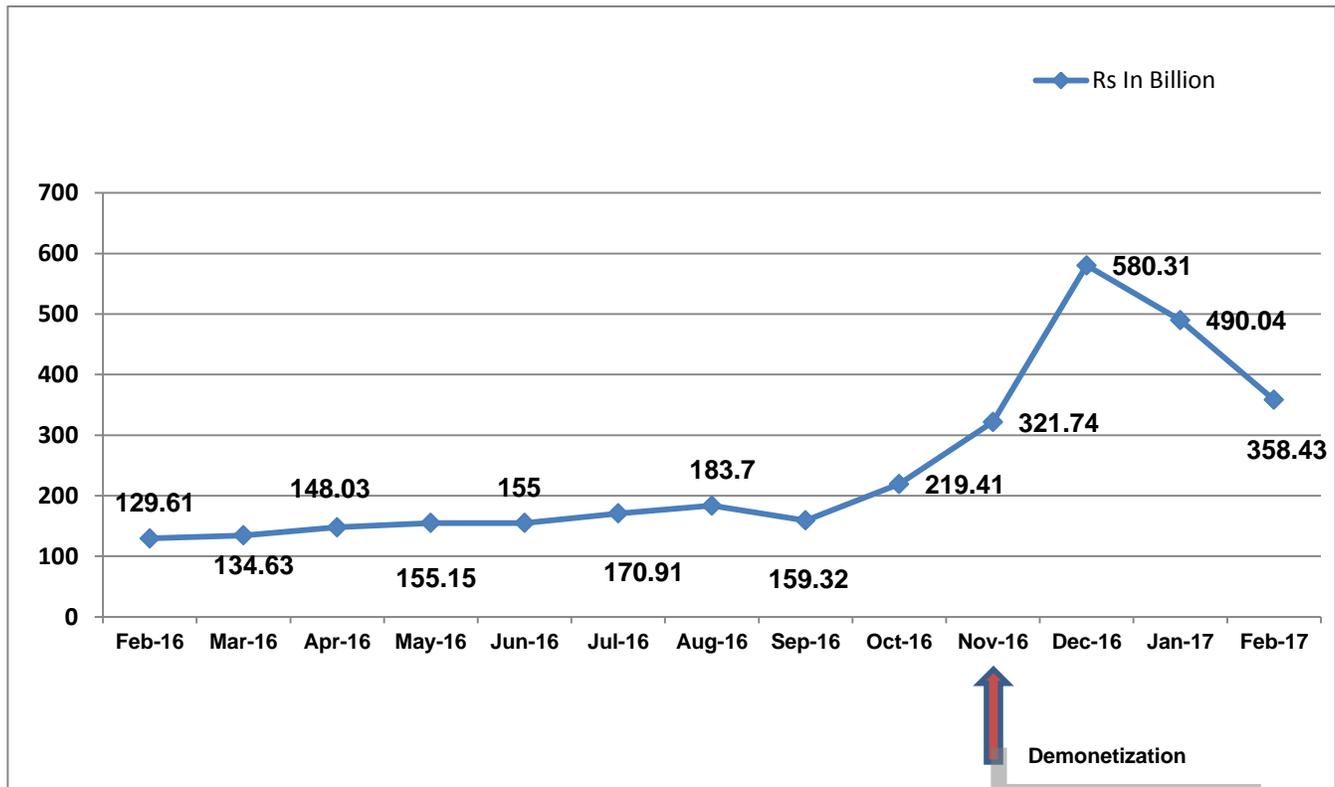


Fig2: Source RBI: <https://www.rbi.org.in/scripts/ATMView.aspx?atmid=67>

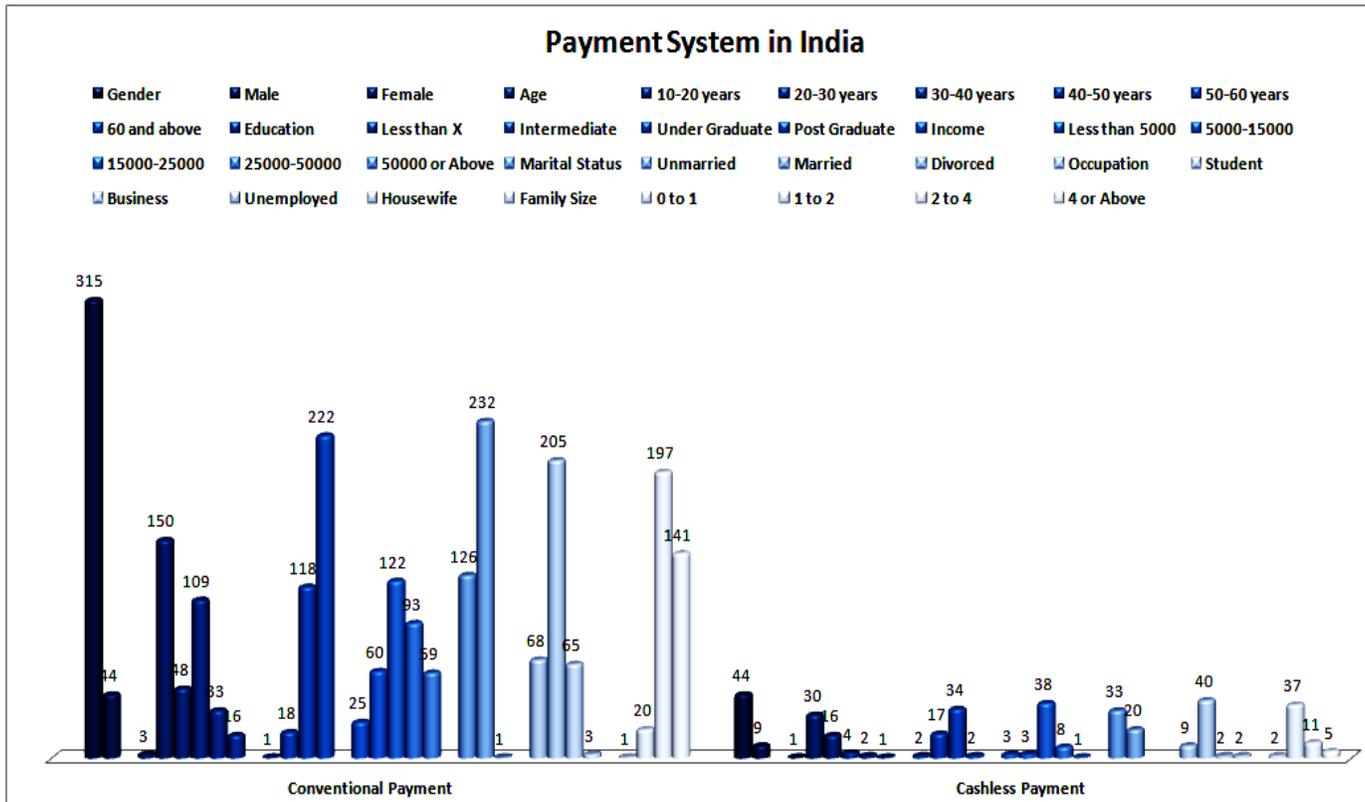


Fig 3: Payment System in India

Table 1: Reliability analysis

Variables	items	Mean	SD	Cronbach's Alpha
Ease of Use	4	47.68	12.66	0.940
Usefulness	5	52.09	10.99	0.905
Security and Privacy	4	16.41	5.80	0.947
Exchange and Refunds	1	15.69	3.65	0.861
Cost and Other Surcharges	2	12.22	4.55	0.902
Mobility	1	10.11	3.11	0.866
Confidence of making payment	1	11.33	4.11	0.871
Overall	18	165.53	6.41	0.899

where:  $k$  refers to the number of scale items

$\sigma_{y_i}^2$  refers to the variance associated with item  $i$

$\sigma_x^2$  refers to the variance associated with the observed total scores

$$\alpha = \left( \frac{k}{k-1} \right) \left( 1 - \frac{\sum_{i=1}^k \sigma_{y_i}^2}{\sigma_x^2} \right)$$

Reliability analysis is used to measure the internal consistency ("reliability") of the questionnaire. As the questionnaire framed is based on a Likert scale. To have consistency coefficient alpha value should be more than 0.05. If the coefficient value is less than 0.5 then the value is usually unacceptable, especially for scales purporting to be one-dimensional. In the current reliability, it is observed that the coefficient value of alpha in all the cases is above 0.05 so it can be drawn that questionnaire are highly consistent and reliable..

The table given above shows the Mean Z-Score of the Likert Scale of each parameter within each variable, here the positive average Z-Score infers that the respondents comprise

of all the groups. As in cashless economy, we can see that there are several factors where consumers agreed as well as to some factors do not agree. Ease of use, mobility and usefulness are mostly acceptable variable by the consumer where as security and exchange are the variable where consumer are not satisfied or do not agree with the parameter. As in case of conventional economy, we can see that mostly consumer are satisfied with factors in which they agreed with upon the variables. The factors upon which consumer do not agree with the conventional payment system are add on benefits with the bank, difficult to track past transactions as well as mobility with heavy cash

#### 4.1.2. Cashless Payment Vs Conventional Payment System

**Table 4: Cashless Payment**

Parameters		Z-Score Mean± Standard Deviation	Inference
Ease of use	Easy to make payment.	0.001±1.001	Agreed
	Easy to manage amount.	0.000±1.001	Agreed
	Widely been accepted merchandise.	-0.002±1.001	Not Agreed
	Payment mechanism is fast.	0.002±1.001	Agreed
usefulness	It adds to the benefits with banks.	0.003±0.999	Agreed
	It builds my credentials.	0.001±1.001	Agreed
	Helps in getting discounts and offers.	0.001±1.001	Agreed
	Easy to track past transaction.	0.002±1.000	Agreed
	Easier to control my expenses.	-0.002±1.001	Not Agreed
Security and privacy	My personal information is secured.	-0.001±1.001	Not Agreed
	My credentials will free from any breach.	-0.002±0.999	Not Agreed
	There are systems to protect from hacking.	-0.002±1.001	Not Agreed
	There will be surveillance on amount of transaction.	-0.003±0.999	Not Agreed
Exchange and refunds	The amount is easily received once product is returned.	-0.003±0.999	Not Agreed
Cost and Other surcharges	Transaction charges applied on payment	0.002±1.001	Agreed
	Transaction limit defined.	-0.001±1.001	Not Agreed
Mobility	I can take it easily wherever I want without fear.	0.001±1.001	Agreed
Confidence	While making Payment I feel confidence	-0.001±1.001	Not Agreed

**Table 5: Conventional Payment System**

Parameters		Z-Score Mean± Standard Deviation	Inference
Ease of use	It is always easy to make payment.	0.002±1.001	Agreed
	It is easy to manage amount.	0.001±1.001	Agreed
	Payment system widely been accepted by all merchandise.	0.001±1.001	Agreed
	Payment mechanism is fast.	0.002±1.001	Agreed
usefulness	It adds to the benefits with banks.	-0.002±1.001	Not Agreed
	It builds my credentials.	-0.002±1.001	Not Agreed
	Helps in getting discounts and offers.	0.001±1.001	Agreed
	Easy to track past transaction.	-0.002±1.001	Not Agreed
	Easier to control my expenses.	0.003±0.999	Agreed
Security and privacy	My personal information is secured.	0.001±1.001	Agreed
	My credentials is free from any breach.	0.002±1.000	Agreed
	There is no threat of hack.	0.002±1.001	Agreed
	There will be surveillance on amount of transaction.	0.001±1.001	Agreed
Exchange and refunds	The amount is easily received once product is returned.	0.001±1.001	Agreed
Cost and Other surcharges	Transaction charges applied on payment.	-0.002±1.001	Not Agreed
	Transaction limit defined.	0.001±1.001	Not Agreed
Mobility	I can take it easily wherever I want without fear.	-0.002±0.999	Not Agreed
Confidence	While making Payment I feel confidence	0.002±1.001	Agreed

**Table 6: Hypothesis Testing using Correlation Test**

Variables	Type of Payment	Mean	SD	t-value	P-Value	Hypothesis Acceptance / Rejection
Ease of Use	Cashless Payment	3.11	0.70	1.174	0.039	H1 Accepted
	Conventional Payment	3.01	0.60			
Usefulness	Cashless Payment	3.20	0.85	1.839	0.005	H1 Accepted
	Conventional Payment	2.85	0.51			
Security and Privacy	Cashless Payment	3.15	0.82	1.689	0.008	H1 Accepted
	Conventional Payment	2.90	0.52			
Exchange and Refunds	Cashless Payment	2.91	0.56	0.011	0.009	H1 Accepted
	Conventional Payment	2.91	0.81			
Cost and Other Surcharges	Cashless Payment	3.15	0.55	0.001	0.007	H1 Accepted
	Conventional Payment	2.98	0.74			
Mobility	Cashless Payment	3.01	0.75	1.065	0.001	H1 Accepted
	Conventional Payment	3.22	0.71			
Confidence of making payment	Cashless Payment	3.01	0.91	1.178	0.042	H1 Accepted
	Conventional Payment	3.25	0.70			

Here the Pearson correlation test is used to measure the linear correlation between variables and types of payments. The derived p value in the above table is lower than the conventional 5% ( $P < 0.05$ ) hence we reject the null hypothesis and accept the entire alternative hypothesis. So we can say that the proposed variables are associated with the type of payment.

**5.1. CONCLUSION:**

The study empirically investigated cashless payment as well as a conventional payment system in India. This study examines the role(s) and impact of cashless payment in contrast to conventional payment system. The research reports the choice of preference as a mode of transaction during the shopping. The concept of cashless payment is to facilitate the transaction and make the economy more transparent in the economic system. As in current studies, it has been mentioned that there are 7 factors that are associated with the behavioral pattern of payment which includes ease of use, usefulness, security & privacy, exchange & refunds, cost & surcharges, mobility and confidence. Correlation test shows the above factors mentioned rejects the null hypothesis and accepts the alternative hypothesis which says the factors are closely associated with the type of payment. These are the factors which govern the choice of payment mode as well as influence the payment mechanism. When payment mode is credit card it has been observed that the consumer basket value increases as compared to payment done by hard cash. Country like India where still cash payment, is dominated due to the reason that electronic payment mechanism is still not been accepted by the majority of people on the other hand there are several risk that associated with the use of electronic payment system. Security measures are being taken by banks and concern authority to arrest scam and phishing but the dissonance in customer’s mind still predominates. When a customer is forced to use card as a mode of payment due to demonetization of the currency the electronic payment increased, but once the currency notes were made available

the EPS declined. There are several reasons which resist an individual to use EPS, which includes security and privacy, exchange and refunds and bank charges where as ease of use, usefulness and mobility influence an individual to use EPS. On the other hand, conventional payment is supported by ease of use, security and privacy, exchange and refunds and confidence in making payment.

**6. POLICY RECOMMENDATIONS:**

1. To increase cashless transactions, POS machines should be made mandatory for all retailers.
2. To check fraud, online banking systems & EPS should be made robust.
3. There should be no surcharges on cashless transactions and add on benefits need to be given to the customers while using EPS.
4. To encourage cashless transactions, there should be a benefit system for the retailers as well.
5. For seamless transactions, fast and trouble free internet connectivity should be available in all places.
6. Consumer awareness program should be launched to educate the consumer while using EPS its benefits and risk association to minimize the cyber crime.
7. Consumer grievance cell should be setup with an objective to handle cyber crime and ensure immediate settlement of dispute with the bank and other third party payment system.

**About the Authors:**

**Dr. Syed Md. Faisal Ali Khan** has done his PhD in Business Management and PGDBM/MBA from New Delhi Institute of Management, working as Lecturer in Jazan University at MIS Department of College of Business Administration. Till date he has around 18 publications in an international journal of repute. An area of interest includes Retailing and Consumer Behavior.

**Dr. Amal Mohammed Sheikh Damanhour** has done her PhD in Business Management (Total Quality Management) from School of Management and Business, University of Wales- Aberystwyth, UK. An area of interest includes Consumer Behavior and satisfaction.

#### REFERENCES:

1. Eastin, M.S., (2002), "Diffusion of e-commerce: an analysis of the adoption of four-e-commerce activities", Department of Telecommunication, Michigan State University, 19(3), 251-267.
2. Feinberg, Richard A. (1986), "Credit Cards as Spending Facilitating Stimuli: A Conditioning Interpretation," *Journal of Consumer Research*, 13 (December), 348–56.
3. Fishbein M, Ajzen I (1975,) "Belief, attitude, intension and behavior: An introduction to theory and research". Addison-Wesley, Reading/MA.
4. Gopal, R. D., Sanders, G. L., Bhattacharjee, S., Agrawal, M., & Wagner, S. C. (2004). A Behavioral Model of Digital Music Piracy. *Journal of Organizational Computing and Electronic Commerce*, 14(2), 89-105.
5. Green, Jeffrey (1997), "A Clear Line of Demarcation," *Credit Card Management*, 10 (December), 14–17.
6. Hirschman, Elizabeth C. (1979), "Differences in Consumer Purchase Behavior by Credit Card Payment System," *Journal of Consumer Research*, 6 (June), 58–66.
7. PTI. (2009). "India emerging as major cyber crime centre", Available at: <http://wegathernews.com/203/indiaemerging-as-major-cyber-crime-centre/>, Visited: 10/31/09.
8. Loewenstein, George and Drazen Prelec (1992), "Anomalies in Intertemporal Choice: Evidence and an Interpretation," *Quarterly Journal of Economics*, 107 (May), 573–597.
9. Moor GC, Benbasat I (1991). "Development of an instrument to measure the perceptions of adopting an information technology innovation", *Information Systems Research*, 2(3), 173-191.
10. Parhonyi R, Nieuwenhuis LJ, Pras A (2005)."Second generation micropayment system: lessons learned", University of Twente, Faculty of Electrical Engineering, Mathematics and Computer Science.
11. Prelec, Drazen and Duncan Simester (2001), "Always Leave Home without It: A Further Investigation of the Credit-Card Effect on Willingness to Pay," *Marketing Letters*, 12 (1), 5–12.
12. Russell, T. (1975). *The economics of bank credit cards*. New York: Praeger Publishers.
13. Schmidt C, Muller R (1999). "A framework for micropayment evaluation", Institut f'ur Wirtschaftsinformatik, Humboldt-Universit'at zu Berlin, Spandauer Str. 1, D-10178 Berlin,Germany.
14. Snelders, H. M. J. J., Lea, S. E. G., Webley, P., & Hussein, G. (1992). The polymorphous concept of money. *Journal of Economic Psychology*, 13, 71-92.
15. Soman, D. (2003). The Effect of Payment Transparency on Consumption: Quasi Experiments from the Field. *Marketing Letters*, 14 (3), 173-183.
16. Soman, Dilip (2001), "Effects of Payment Mechanism on Spending Behavior: The Role of Rehearsal and Immediacy of Payments," *Journal of Consumer Research*, 27 (March), 460–74.
17. Khan, SMFA. (2014), "Factors Effecting Purchase Decision In Online Retail System In India", *International Journal of Development Research*, Vol. 4, Issue, 5, pp. 1183-1186. Available online at <http://www.journalijdr.com>.
18. Thaler, R. H. (1980). "Towards a positive theory of consumer choice", *Journal of Economic Behavior & Organization*, 1, 39-60.
19. Venkatesh V, Morris MG, Davis GB, Davis FD (2003). "User acceptance of information technology: toward a unified view", *MIS Quarterly*, 425- 478.