Factors Affecting Usage of Online Payment Systems: An Amalgamation of TPB and UTAUT Models

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ABSTRACT

Introduction: Online payment systems are the kind of payment which is done with the help of Internet. Payment through credit card, debit card, Gpay, Paytm, mobile wallets are the type of online payment systems. This research paper focuses on the factors of the intention to use the online payment systems. The main aim of this paper is to understand the factors and drivers for adoption of mobile payment apps and the concerns which consumers faced while using them. *Objective:* To study the effect of Attitude, subjective norms, perceived behavioral control on intention to use the online payment systems and to study the effect of perceived usefulness, effort expectancy, social influence, perceived innovativeness, user behavior on intention to use the online payment systems. *Methods:* In this research respondents are from Himachal Pradesh, Uttar Pradesh and Punjab. Where the respondents would be of youth, middle-aged people who use any kind of mobile payment system. Sampling technique used in this research is convenience sampling technique. The research paper is based on UTAUT Model and TPB Model where the sample size is 205. Statistical techniques which have been used in this research is PLS-SEM. In our research we find attitude, trust, user behavior, innovation, effort expectancy, social influence, subjective norms and performance expectancy are the factors which directly influence the intention to use online payment system. As a result, these factors play a significant and positive role for the use of online payment systems.

Keywords: Online Payment System, Mobile Wallet, UTAUT Model, Survey, Digital Era, E-banking, Youth.

INTRODUCTION

Electronic devices like mobile phones, wireless tablets, laptops, and computers help to transmitall kinds of data. Innovations in human life plays an important role as it makes the life easy. Development and acceptance of new technologies have led to emergence of many facilities. One of the facilities is the facility of online payments which has made life much easier for the consumers to make payments for the products. Mobile banking means that a platform where clients interact with the bank with the help of mobile devices. New innovations and digitalization of life are forming a new way for doing business and making life easy. Online payments include the payments through unified payments interface (UPI), Mobile Wallets, Paytm and through many more applications and services which are provided by banks too. These mobile wallet apps and banking apps are available for free on Apple store and google play store. Online transaction changed the traditional banking and transactions ways. Informational technology with these online apps causing a huge transformation of traditional banking system to online banking systems.

The ever dynamic and continuously growing technology had paved the way for the development of mobile payments, it has made payments so easy that it could be done with a click on a button from any place at any time and sensing its opportunity companies such as Paytm, Mobikwik, Freecharge, Oxygen etc have cashed in and leveraged their expertise with a supplement from innovation. The government policies and the government's vision of digital India were in line with the vision of these companies. The exponential rate of smartphone penetration and increased internet access has provided a conducive environment for these companies to thrive. E banking is additionally one among the popular modes of banking dealing while not visiting any institution.

The main aim of this paper is to understand the factors and drivers for adoption of mobile payment apps and the concerns which consumers faced while using them. There are many factors which affect the usage of online payment methods directly and indirectly as well.

Mobile payment methods have helped both the businesses and customers in a significant manner. Instead of customers having to keep up with punch cards or key ring tags, customer's details get stored in the mobile phones which makes it easy for them to make the payment. Previously, many small businesses, especially those operating at remote locations such as a farmers' market or a food truck, were unable to accept credit card.

Most customers like quick services, especially when paying for the purchases. It was found that mobile payment is easier and faster than using credit cards and will let the users pay in a single touch. Other factor was that in mobile payments, the account number is masked from being public. One need not know the account number of the person to transfer money.

Banks like HDFC bank and ICCI bank has their own digital wallets like Payzapp and pockets also has its app named YONO (You only need one). YONO offers services like bank account opening, fund transfer, loans and cashless payments. It also provides services like travel bookings, online shopping and medical payment bills.

There are various mobile wallets which are available and they are Phonepe, Mobiwik (With the help of this mobile payment platform people can transfer the money with anyone over their preferred social networks platforms like Facebook, WhatsApp, Twitter and Google+), Airtel Money (Airtel Money is a wallet that does not permit to withdraw cash or redemption by the customers but it can be used to make bill payments, online shopping, recharges and money transfer),GPay, Paytm (Paytm is used for mobile recharges, bill payments, travel, movies, and events bookings as well as in-store payments at grocery stores, fruits and vegetable shops, restaurants, pharmacies and educational institutions with the Paytm QR code),UPI (UPI enables customers to make payments to person-to-person person-to-merchant, and merchant-to-person. This service is available for 24 hours and money can be transfer immediately and is regulated by the RBI).

REVIEW OF LITERATURE

Pavithra (2020) had studied about the consumer behavior towards a new term versatile wallet or Mobile based wallet, this research is constrained to Chennai region only. By this research paper we would also be able to understand the benefits of M-wallets for E-banking industry in India. The sample size for this intensive research has been decided as 320 customers who has been using mobile wallets. Convenience sampling technique has been used to collect the data. Purpose of this research were described to respondents by interview method. And the collected data has been analyzed using SPSS and AMOS software.

Shanmugam and Raj (2020) this research paper is to analyses variegated security problem, risk and trust issues which affect the mobile wallet adoption. This research paper has used security, risk and trust as independent variable and treated adoption of mobile wallet as dependent variable. This research paper is kind of secondary research where author has not collected any data, they just analyses the available data and visualizations to understand the on-ground reality of the market. To analyze and to understand the objectives author has used TAM and UTAUT model. The study talk about how the confidence on the mobile wallet is the key factor that directly affects the customer satisfaction and happiness.

Gupta, Mittal and Mittal (2019) had studied factors that affect consumer adoption towards online payment services- UPI. Author has identified some key area which affects the intention to adopt UPIs which includes Add on Benefits, Perceived risk, Ease of Use, Social Influence, Basic Infrastructure and also perceived Value. The sample size for this instrumental research is 369 and snowball sampling method has been used to collect raw data. A questionnaire has been made using all six independent variables to determine the dependent construct- Intention to adopt UPIs. To further analyze the whole data PLS path modeling and SEM has been used. To further understand the whole data TAM and TRA models has been used.

Tiago et al. (2016) studies the determinants of mobile payment adoption and the intention to endorse this technology. Compatibility, perceived technology security, performance expectations, innovativeness and social influence has been taken as independent variable to understand the effects over the adoption of

mobile payment. In this research two models have been used one is UTAUT2- Unified Theory of Acceptance and Use of Technology and the second one is DOI- Diffusion of Innovations. The research model has taken 301 respondents as the sample for the research, data has been gathered through an online survey from a European country- Portugal. Convenience sampling method has been used to gather data. Data has been analyzed with the help of structured equation modeling (SEM).

Lunaa et al. (2018) studies the factors which motivates the adoption of these mobile payment system. This research has used two models to understand direct and indirect effects of the determinants related to the adoption of mobile payment system. First one is TRA (Theory of Reasoned Action) or the TAM- Technology Acceptance Model. Security, usefulness, ease of use and attitude has been taken as independent variable to understand the relation with intention to use mobile payments. The research has taken 500 respondents as sample for this research and has used convenience sampling to collect the data and has used SPSS 18.0 and confirmatory (AMOS 18) method for data analysis. The structural equation model and behavior model has been used to the required output from research.

Mora et al. (2017) studies the barriers that prevents adoption of electronic banking. This research is also trying to understand the effect of gender on adoption of electronic banking. Complexity, risk, value, inertia and usage has been taken as barriers or we can say independent variable to understand the objectives of this research. Researcher has taken Natural person resident in Spain and non-user of internet or mobile banking as sampling unit. The sample size for this intensive research has been taken as 214 individuals. Self-administered questionnaire has been framed and snowball approach hasbeen used to gather the data. Further analysis has been done using structural equations, specifically partial least squares and SmartPLS 3.2.3 software.

Singh et al. (2018) studies the major factors which drives the use of mobile commerce. Usefulness, Ease of Use, Trust and Self-Efficacy has been used as independent variable to understand the Mobile commerce and Mobile application market. Based on the objectives target segment has been chosen and there were 160 respondents who has been taken as sample in this research. This study has used convenience sampling method to collect data and has used Facebook to share survey link. Further data has been analyzed using SPSS 22.0 software. Technology acceptance model (TAM) has been used in this research to understand consumer attitude to use a new technology.

Aydin and Burnaz (2016) new technologies and digitalization of life are shaping the ways of doing business as well as the behaviors of consumers. This research paper used stratified random sampling technique for a sample size of 1395.It used partial least squares structural equation modeling (PLS-SEM) and skewness as the statistical technique for analysis. Intention to use and attitude of user depends upon the ease of use, trust and security.

Singha, Sinhab and Cabanillasc (2020) studies the Potential for the use of mobile wallet as an alternative mode of payment worldwide. This research paper used Snowball non-probability sampling technique to

collect the data of 300 respondents. This research used TAM and UTAUT2 (Unified Theory of Acceptance and Use of Technology) models. The user's intention depends upon ease of use, usefulness, perceived risk, attitude of the user.

OBJECTIVE

The main motives of this research are:

- To study the effect of Attitude, subjective norms, perceived behavioral control on intention to use the online payment systems.

- To study the effect of perceived usefulness, effort expectancy, social influence, perceived innovativeness, user behavior on intention to use the online payment systems.

SCOPE OF THE STUDY

- The present study was confined to the Factors lead to the adoption of online payment in different states of India. This study was emphasizing on the behaviors of people towards the Mobile payment and a study on the various services coming under the umbrella of Mobile payment.

- This study can be further used by the government and other management students or research scholars for carrying out the further research on adoption of online payment in different states.

RESEARCH METHODOLOGY

In this research report the respondents are from Himachal Pradesh, Uttar Pradesh and Punjab where the respondents would be of age groups like youth, middle-aged people who use any kind of mobile payment systems. The sampling technique which is used for this research is the **Convenience sampling technique.** In other words, the selection of the sampling unit is left primarily to the researcher or investigator. Convenience sampling technique is least expensive and least time consuming of all the sampling techniques. The sampling units are easily accessible and easy to measure. For this research the sample size is 205.Exact and deliberate information is vital for conduction the research. Method of data assortment must be chosen according to the type of the research. For our research we choose the questionnaire survey for collecting the primary data from the respondents. In the questionnaire of this study, we chose multiple choice questions and 5-point Likert scale.Partial least square structural equation modeling or Partial Square modeling (PLS-SEM) is a moderation model that allows for the simulation of complex effect model models with recent variability. SmartPLS is one of the outstanding applications of Partial Least Squares Structural Equation Modeling (PLS-SEM). Created by Ringle, Wende & Will (2005). This paper is written to address this information gap and help beginners understand how PLS-SEM can be used in marketing research. Research design for the research report will be Causal research. The main objective of causal design is to obtain evidence regarding cause-and-effect relationship between the variables. Models Used in this study

are UTAUT Model and TPB Model.

UTAUT MODEL

The integrated approach to technology adoption (UTAUT) is a model of technological acceptance developed by Venkatesh and others in "User adoption of information technology: A cohesive perspective". UTAUT aims to define user intentions for the use of the information system and subsequent use behavior.

TPB MODEL

The concept of organized behavior (abbreviated as TPB) is a theory that links beliefs and human behavior. The theory is that attitudes, subject matter, and control of tangible behavior, combine together the goals of a person's behavior and behavior.

The independent variables in this research are Performance Expectancy, Effort Expectancy, Social influence, Gender, Age, Experience, voluntariness of use, Personal innovativeness, Subjective norm, Perceived usefulness, Security, Ease of use, Attitude, Perceived risk and dependent variables are user's intention, intention to adopt, Behavioral intentions.

CONCEPTUAL FRAMEWORK

This framework is based on the association of two models and they are TPB model and UTAUT model. This model helps to use in the study of impact of various factors on the intentions of using online payment system.
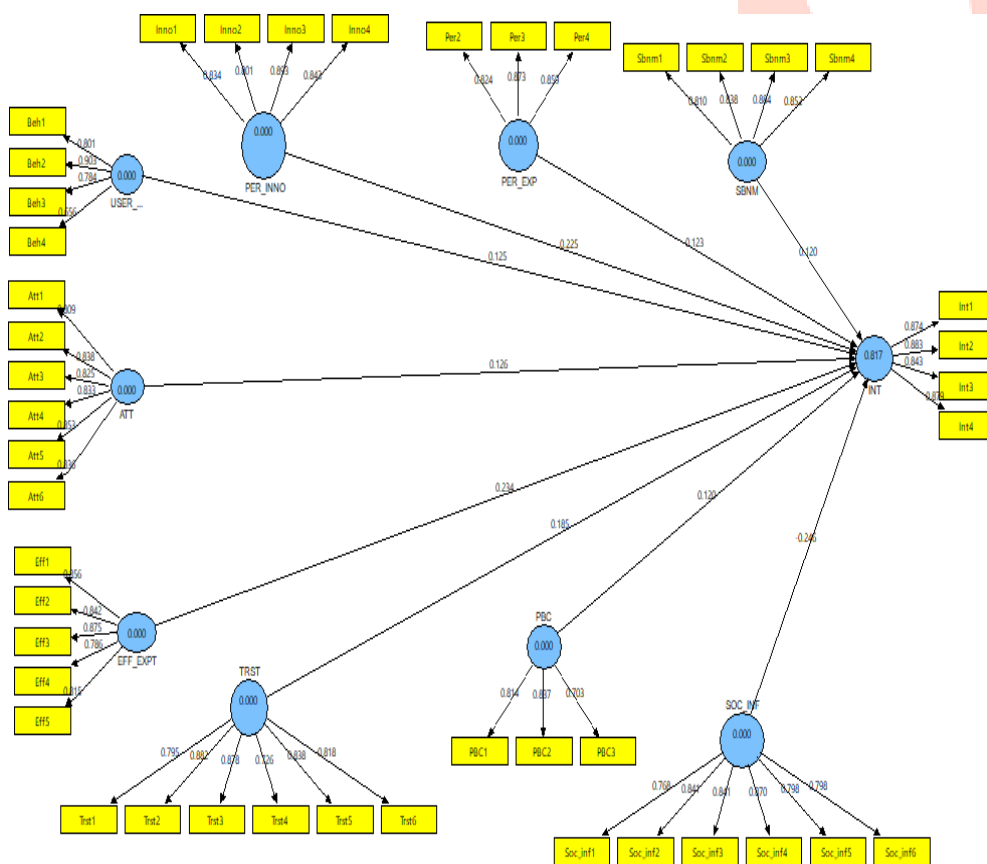
HYPOTHESIS

Table 1: Hypothesis

H1	**Attitude**	Attitude has a positive and significant effect on intention to use online payment systems.
H2	**User Behavior**	User behavior has a positive and significant effect on intention to use online payment systems.
H3	**Effort Expectancy**	Effort Expectancy has a positive and significant effect on intention to use online payment systems.
H4	**Perceived Innovativeness**	Innovation has a positive and significant effect on intention to use online payment systems.
H5	**Perceived behavior**	Perceived behavior has a positive and significant effect on intention to use online payment systems.
H6	**Performance Expectancy**	Performance Expectancy has a positive and significant effect on intention to use online payment systems.
H7	**Subjective Norms**	Subjective norms have a positive and significant effect on intention to use online payment systems.
H8	**Social influence**	Social influence has a positive and significant effect on intention to use online payment systems.
H9	**Trust**	Trust has a positive and significant effect on intention to use online payment systems.

RESULT

DESCRIPTIVE ANALYSIS

Sample Size of our research is 205 respondents

AGE	
Less Than 20 Years	8.3%
20-25 Years	62%
26-30 Years	14.1%
30-35 Years	3.4
More Than 35 Years	12.2%

GENDER	
Male	61.5%
Female	38.5%

QUALIFICATION	
Higher Secondary	20%
Graduate	15.6%
Post Graduate	61.95%
PHD	0.97%

OCCUPATION	
Student	52.2%
Private Job	33.7%
Public Job	3.41%
Professional	14.63%
Businessman	6.8%
Homemaker	2.9%
Other Occupation	2.9%

ANNUAL INCOME	
Less than 2,50,000	31.7%
2,50,000-3,00,000	5.00%
3,00,000 – 4,50,000	5.3%
More than 4,50,000	19%
None	39%

MEASUREMENT MODEL

Confirmatory Factor Analysis:

Confirmatory Factor Analysis (CFA) is a special kind of factor analysis most commonly used in social research. CFA is widely used to determine the authenticity of a single model, to assess the loading value of an object to assess whether a set of factors is related or not, and to assess the variability and functionality of a set of measures.

It Works on Validity

1.   Convergent Validity 2. Divergent Validity Reliability

1. Composite Reliability 2. Internal Reliability

Combined Reliability:

Combined reliability is used to assess internal consistency, which should be greater than the 0.7 bench that will be considered sufficient and also referred to the coefficient, which is obtained by combining all true point variations and covariance in the combination of related index variables.

Internal Reliability:

Internal consistency tests the consistency of results on all items in the tests. If the study had a good internal

agreement, respondents should answer the same question for each question, namely three "agree" or three "strongly disagree." If different answers are given, there is a sign that the questions are not well-formed and reliable. It is measured in Cronbach Alpha mode where the value must be> 0.7 for the model to be satisfactory.

Cronbach Alpha:

Cronbach alpha is a measure of internal consistency, which means how closely related the items are as a group. It is considered to be as measure of reliability. Cronbach's alpha is not a statistical test; it is a coefficient of reliability or consistency. The generally accepted rule is that α 0.6-0.7 indicates an acceptable level of reliability, and 0.8 or more is a very good level.

Table 2: Results of Outer Loading

Construct/Variables	Items	Loadings	Construct/Variables	Items	Loadings
Attitude	Att1	0.8091	Perceived Behavioral Control	PBC1	0.8143
	Att2	0.8378		PBC2	0.8374
	Att3	0.8249		PBC3	0.7034
	Att4	0.8333	Performance Expectancy	Per2	0.824
	Att5	0.8527		Per3	0.8734
	Att6	0.8362		Per4	0.8593
User Behavior	Beh1	0.8013	Subjective Norms	Sbnm1	0.8104
	Beh2	0.9032		Sbnm2	0.8376
	Beh3	0.784		Sbnm3	0.8845
	Beh4	0.656		Sbnm4	0.8524
Effort Expectancy	Eff1	0.8564	Social Influence	Soc_inf1	0.7684
	Eff2	0.8423		Soc_inf2	0.8409
	Eff3	0.8752		Soc_inf3	0.8405
	Eff4	0.7863		Soc_inf4	0.8704
	Eff5	0.8153		Soc_inf5	0.7983
Perceived Innovativeness	Inno1	0.8335		Soc_inf6	0.7977
	Inno2	0.8012	Trust	Trst1	0.7952
	Inno3	0.8926		Trst2	0.8817
	Inno4	0.8427		Trst3	0.8779
Intention	Int1	0.8739		Trst4	0.7258
	Int2	0.8828		Trst5	0.8379
	Int3	0.8426		Trst6	0.8177
	Int4	0.8786			

Convergent Validity

Convergent validity refers to the degree to which two measures of constructs that theoretically should be related, are in fact related.

Table 3: Results of Convergent Validity

	AVE	Composite Reliability	R Square	Cronbach Alpha
ATT	0.693	0.9312	0	0.9114
EFF_EXPT	0.6983	0.9204	0	0.8916
INT	0.7563	0.9254	0.817	0.8926
PBC	0.6197	0.8294	0	0.6952
PER_EXP	0.7267	0.8886	0	0.8119
PER_INNO	0.7109	0.9076	0	0.8644
SBNM	0.7168	0.91	0	0.8685
SOC_INF	0.6725	0.9248	0	0.9026
TRST	0.6796	0.9269	0	0.9048
USER_BEH	0.6257	0.8685	0	0.7962

Only PBC has value 0.6952 but it is close to 0.7 therefore, internal reliability for each construct is established. Composite Reliability is the measurement of internal consistency. Composite reliability of every construct is greater than 0.7, so, the reliability of every construct is established.

Discriminant Validity

Discriminant validity is shown by proof that tests of constructs that should not be strongly related to each other theoretically are not, in fact, found to be highly correlated with each other.

Table 4: Results of Discriminant Validity

	ATT	EFF_EXPT	INT	PBC	PER_EXP	PER_INNO	SBNM	SOC_INF	TST	USER_BEH
ATT	0.8325									
EFF_EXPT	0.7253	0.8356								
INT	0.7533	0.8017	0.8697							
PBC	0.6471	0.6371	0.7157	0.7872						
PER_EXP	0.6908	0.7547	0.7440	0.5634	0.8525					
PER_INNO	0.5682	0.5079	0.6424	0.5781	0.5620	0.8431				
SBNM	0.5808	0.4748	0.6073	0.6617	0.5000	0.6532	0.8466			
SOC_INF	0.4947	0.3573	0.3813	0.4501	0.4061	0.7198	0.6548	0.8201		
TRST	0.8163	0.7575	0.8142	0.7403	0.6929	0.7165	0.6951	0.5651	0.8244	
USER_BEH	0.5527	0.6782	0.6713	0.4874	0.6091	0.4424	0.3847	0.2611	0.5633	0.7910

The values which are highlighted in table 4 are the square root of AVE. The discriminant validity is proved in this research as the values below the highlighted diagonal are lower. The discriminant validity can be proven by different criteria's but this criteria is followed extensively that is why we used this method to prove the discriminant validity.

Table 5: Results of Hypothesis

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)	Alternative Hypothesis
ATT -> INT	0.1259	0.1335	0.0587	0.0587	2.1438	Accepted and Significant
EFF_EXPT -> INT	0.2336	0.2327	0.0672	0.0672	3.4758	Accepted and Significant
PBC -> INT	0.1199	0.1181	0.0516	0.0516	2.325	Accepted and Significant
PER_EXP -> INT	0.1225	0.1232	0.0664	0.0664	1.8455*	Accepted and Significant
PER_INNO -> INT	0.225	0.2191	0.0543	0.0543	4.1432	Accepted and Significant
SBNM -> INT	0.1205	0.1139	0.06	0.06	2.0091	Accepted and Significant
SOC_INF -> INT	0.2459	0.2366	0.0488	0.0488	5.0407	Accepted and Significant
TRST -> INT	0.1846	0.1756	0.0811	0.0811	2.2757	Accepted and Significant
USER_BEH -> INT	0.1246	0.1346	0.0554	0.0554	2.2474	Accepted and Significant
* at 90%						

R –square is a statistical estimate that represents the Proportion of the variance for a dependent varying quantity that's described by an independent varying quantity or variables in a regression model. R-square describes to what range or extent the variance of one variable explains the variance of the other variable. It is also known as the Coefficient of Determination.

> **The formula for R-square is:-**
>
> **R-square = 1- Unexplained Variation/Total Variation**

Attitude, trust, User behavior, effort expectancy, social influence, subjective norms, Performance expectancy are the factors which is helpful in the intention to use online payment systems. As a result, these factors play a significant and positive role for the use of online payment systems.

Table 6: Results of Path Analysis

Total	R2	Explanation	SSO	SSE	Q2= 1-SSE/SSO	Predictive Relevance
INT	0.817	High	808	309.9284	0.6164	Substantial

Path analysis is a type of multiple regression Statistical measure that is used to estimate casual models through examining the relationships between a dependent varying quantity and two or more than two independent variables. By utilizing this technique, researcher can estimate both the magnitude and significance of casual connections between variables.

Limitations of the study:

- The study does not look into the privacy concerns and financial transactions of the users.

- During the study we are bound to collect the data from the online ways only.

- Data was collected from all over the states as because of the COVID19 we can't visit to our responses and can't check whether there they are filling the responses properly or not.

MANAGERIAL IMPLICATIONS of the study:

As most of the companies are already using this technology for the betterment of the company or to connect with their customers like JIO and AMAZON. They are having their one banking app from which customers can pay their bills or recharge their phone for which they are giving offers to their customers and giving cashback rewards so that they can engage their customer and from this new customer will also join their platforms.

In the study also we have done the same we try to find out factors which are going to affect the customers to use more and more online payment system. So, in the study total 9 factors are there which are going to affect the customers. These factors are Attitude, User behavior, Effort expectancy, Perceived innovativeness, Perceived behavior, Performance expectancy, Subjective norms, Social influence and Trust.

These factors are there with the company can use to influence their customers as per our study. Clearly stated that these all the factors are positive and having the significant effect on intention to use online payment system. Only focusing on these factors, they can attract more and more customers. Which is going to help their company to grow because for their customers these factors are like the parameter for them to judge their system.

The study found out that people are aware about the online payment systems and use them. But some of the respondents were aware of it but has not yet used it. Google pay and Paytm and PhonePe are the common online payment platforms available to the respondents. Males tend to use online payments more frequently than females. Online payment system are generally preferred by the youth (age group 20-25) and students on particular form majority of the customer base, this is an important information for the online payment companies as they should focus on providing an eco-system for online payments in and around the educational institutions. The study shows that Post graduated people are the ones who tends to use these services the most and income is not a huge determining factor for the usage of online payments amongst people as students constitute a majority of customer base and their income is not a significant figure. Online payments are efficient in recording the financial transactions which help in addressing the parallel economy.

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