

# Problems & Challenges Faced By Mobile Payment Applications Users in India

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**ABSTRACT** - Recent innovations in digital payments in India and government push towards cashless economy are creating awareness among consumers towards new payment channels. In the diverse methods of Digital Payments, one is Mobile Wallets which are utilized by means of Internet and through Smartphone applications. In the present study a considerable body of research has sought to understand the adoption process and the antecedents affecting it. An attempt has been made to find out the problems and challenges faced by mobile payment applications users in India. Data for the study were collected through an online survey from 200 participants, out of these only 130 respondents filled the questionnaire. Effort has been done to empirically test the relation between all of the constructs and Behavioral Intention (BI) to adopt mobile payment application. The study likewise added to demonstrate that US plays a partial mediating role between adoption factors (i.e. Performance Expectancy Innovativeness, Perceived Compatibility, Social Influence, Hedonic Motivation, Price Value, Effort Expectancy, Facilitating Conditions, User Satisfaction, and Behavioral Intention). The study recommends that users ought to see Mobile payment applications if are helpful, simple, perfect, and advantageous and a speedier method to direct exchanges.

**Keywords:** Digital Payments, Behavioral Intention (BI), Performance Expectancy, Innovativeness, Perceived Compatibility, Social Influence, Hedonic Motivation.

## I. INTRODUCTION

Mobile wallets are a payment strategy which for the most part alludes to the nearby associations between the web, cell phones and Banks There are three unique kinds of mobile payment applications markets specifically much managed markets, modestly controlled markets and negligible directed markets. The exchanges on Immediate Payment Service (IMPS) have constantly multiplied over the two years. In Feb. 2018, Unified Payments Interface (UPI) exchanges alone hit 170 million and BHIM UPI (Bharat Interface for Money) exchanges contact Rs. 1Trillion out of 2018. It indicates that there are 700 million mobile phone users in India. The quantity of Mobile Phone Users and increment in exchanges shows that everything that India embraces is Mobile Payments as per Mobile Payment Forum of India, 2018[2]. Demonetisation has turned into a noteworthy explanation behind the selection of cashless exchanges or advanced installments, as another option to money for Indian Consumers. In the diverse methods of Digital Payments, one is Mobile Wallets which are utilized by means of Internet and through Smartphone applications [3]. A mobile wallet is an approach to convey your Master card or credit card data in a computerized shape on your cell phone. Rather than utilizing your physical plastic card to make buys, one can pay with your cell phone, tablet, or Smartwatch. Both installment

frameworks and mobile phones and systems/applications are basic to the manner by which we live in the 21<sup>st</sup> century [4].

As per the survey directed by the Statista enterprise (2015), the income for the overall mobile payment market is predicted to accomplish USD721 Billion of every 2017, along these lines getting the opportunity to be a champion among the most basic techniques for leading mobile transactions. In spite of the fact that a couple of creators suggests the mobile payment applications and mobile banking an account as being equivalent [5], or that a few their qualities cover [6], they are exceptionally distinctive structures. To the extent, the number of players included in the mobile banking or portable managing an account is a basic direct consumer and bank connection while mobile payment is a three gathering process between the merchant, consumer, and banks or mobile companies. Our work center is solely around the issues looked by buyers while adopting mobile payment applications, as indicated by the past definitions and distinctions presented.

Mobile payment is a reasonably new zone of research, under-examined when stood out from related zones of research, for instance, internet and mobile banking, or Commerce, where investigators have been by and large coordinated. A couple of creators still consider that mobile payment applications gathering research is in its beginning

[7], regardless of whether a number of concentrates extended in the amount of a couple of years [8]. The importance of mobile payment is included by few authors, they say it allows to make a particular incentive to the two merchants and customers [9], that it is a champion among the most essential drivers of the accomplishment of mobile commerce business [10], that is changing the mobile payment market, or that is getting creating thought all around [11], foreseeing its splendid future. Clients of mobile phones presently can access the web, scan for data, play games, check stocks on the web and the sky is the limit from there. Every one of these improvements has come about because of innovative advances empowering mobile phones to perform modern undertakings. What's more, handset producers are bringing down gadget costs while telecom organizations are giving better voice and web associations. Driven by such innovative advancements and lower costs the number of mobile phone users is expanding [12]. The acceptance of innovation has been an essential subject throughout the previous 20 years or more. An impressive assortment of research has looked to comprehend the appropriation procedure and the predecessors influencing it, and quite a bit of that exploration has made huge commitments to current data frameworks (IS) investigate both hypothetically and practically[13].

## II. REVIEW OF LITERATURE

[14] **Dong-Hee Shin (2009)** has done a validated study in the context of mobile wallet acceptance by consumers by using the unified theory of acceptance and use of technology model. The independent factors taken in the study are attitude and intention, perceived usefulness, perceived ease of use, perceived security, self-efficiency, social influence, moderator effects, and trust. The Study found that perceived security by the consumer is a major factor which affects the M-wallet acceptance.

[15] **Shaw Norman (2014)** had studied the mediating influence of Trust in the adoption of Mobile wallets of Canadian Consumers. The main objective of the study was to evaluate the factors that influence consumer acceptance. The study has taken different factors for informal learning to know how people find out the new applications for their Smartphone. The study has taken trust as a mediator, other factors taken in the study are Mobile wallet self-efficiency, perceived ease of use, perceived usefulness to know about the intention to use the mobile wallets by Canadian consumers. The investigation finds that perceived usefulness is the most imperative factor that impacts consumers in their aim to utilize a Smartphone for payment.

[16] **Imgraben James & Engelbrecht Alewyn et al., (2014)** has done a survey on smart mobile device users who are getting more technological savvy. The survey was done in the University of Australia from smart mobile phone owners. The Five sections of the survey represent the main

threats that mobile users exposed to Malware, general security, unauthorized access, phishing, Wi-Fi and Bluetooth security. The findings of the study reveal that many end users are by and largely ignorant of risks in subject to leaving their Wi-Fi and Bluetooth turned on every one of the circumstances and once in a while they didn't get adequate instruction in regards to their Smart gadgets. The three consequences which give results of Phishing scams are Bank Account, Social Networking Account and E-mail accounts.

[17] **Mingxing et al., (2014)** has done an empirical study has completed an empirical investigation on three players of mobile payment, for example, mobile operators, service providers, and financial organizations because of users' perceived risk and trust. The data is collected from 196 users in China. The factors taken in a study are perceived usefulness, perceived ease of use, perceived risk and trust towards the intention to use. The data is analyzed by using the structural equation model. The study reveals that perceived ease of use, perceived usefulness, and trust in mobile application specialist organizations and their trust in financial associations have a noteworthy impact on users' expectation to use mobile payment while users' trust in mobile administrators has no significant effect on user's goal to use mobile wallets.

[18] **Shukla (2016)** has studied the present and the future state of mobile wallets in India. This study also includes the various stakeholders and their potential attractions towards them-payments. The study was analyzed through the online portal of vibes 2013 mobile customer survey. The study concludes that mobile wallets are not just about payments, but it is becoming a path-breaking social experience.

[19] **Oliveira Tiago et al., (2016)** has done an empirical study to distinguish the determinants of mobile payment adoption in the European country, Portugal. The independent variables for the study are performance expectancy, social influence, hedonic motivation, price value, and habit, effort expectancy, facilitating condition, perceived technology, and security. The dependent variable taken for the study is behavior intention. Demographic factors taken for studies are age, gender, and experience. The data is analyzed by structural equation modeling technique. Some innovativeness variables also are taken for the adoption of mobile payments. Data is collected from 789 students from universities in Portugal by e-mail, from which 203 respondents give valid results. The study found that performance expectations, compatibility, perceived technology, security, innovativeness, and social influence have significant outcome over the adoption of mobile payment.

[20] **Mahapatra (2017)** has conducted an empirical study on mobile shopping among young consumers in the national capital region of India by using the structural equation model technique. The data was collected using a

survey method. The study found that the mobile phone is an effective channel for shopping due to search, possession, evaluation and post-purchase convenience.

[21] **Wu et al., (2017)** has identified two major factors that persuade consumer acceptance of mobile payment system. The study also investigates the role of emotion in consumer reception of m-payment across time. The data is collected from 484 respondents through online Survey. SEM and multigroup analysis were used to test the hypothesis. The results found in a study that positive emotion has a negative impact on perceived risk and positive impact on perceived usefulness.

[22] **Manikaran .S and Jayakodi Mary (2017)** has studied the factors that influence consumers in the adoption of mobile wallets with special reference to Chennai city. The main aim of the study is to explain the applications and usage of wallets that affects the consumers' decision to adopt mobile wallets. The data was collected using a structured questionnaire and analyzed by using ANOVA to get the statistical result. The results found that factors like Convenience, brand loyalty plays an important role and factors such as the safety of funds and security plays challenging factors in the adoption of M-wallets.

[23] **Singh Nidhi and Srivastava Shalini et al., (2017)** studies about the north Indian consumers' inclination and satisfaction of M-wallets. The independent variables taken for the study are security, trust, ease of use, self-efficiency etc. The study also taken some dimensions such as preferences, satisfaction and usage rate of mobile wallets are used to test the relationship among them. The result shows that trust, security, and hedonism are the most influencing variables and some demographic variables such as age, gender and education also influence consumer satisfaction and usage rate of mobile wallets in North India.

[24] **Saxena Nitin (2017)** has studied the role of mobile wallets in online shopping. The objective of the study was to understand the consumer adoption status and to know about the consumer awareness level of M-wallet. The study found that Time study is the most influencing factor for the consumers. It is also found that M-wallets are generally used by consumers for doing Recharges.

[25] **Tadse .M. Abhijit and Nannade (2017)** has explained the usage and satisfaction level of Paytm users based on different parameters. The respondents were categorized on the basis of the frequency of usage, age, the purpose of usage and average monthly spending on Paytm. The study concluded that privacy and convenience were the main factors in the usage of the app but the payment gateway needs to improve as 70% of people faced problem with a payment gateway.

[26] **Alqudan Mutasim Ahmad (2018)** has studied the consumer protection legal framework for mobile payments in the United Arab Emirates. The study focuses on the

issues of protection against unauthorized charges issues of oversight of M-payment provides and protection of consumer data. The study concluded that it may cause confusion if the consumer decides to complain directly to the supervisory bodies and regulated participants sometimes times does not show as much commitment which consumer wants. The other problem faced is consumers' protection against unauthorized charges which depends on what types of payment instruments the consumer links to his mobile phone. It was suggested to make some legislative changes to resolve these problems.

### III. RESEARCH GAP

The independent variables taken for the study are from the previous year studies i.e. Performance Expectancy [27], Innovativeness [28], Perceived Compatibility [29], Social Influence [19], Hedonic Motivation [19], Price Value [19], Perceived Technology Security [30], Effort Expectancy [19], Facilitating Conditions [19], User Satisfaction [19], Behavioral Intention [31]; Venkatesh et al., [27] on which till today, not any comprehensive study done on Punjab region. In this study, the effect of the independent variable on the dependent variable has also been analyzed by using Mediator. The other Research gap is that we have taken both Smartphone and non Smartphone users for the study because after taking an initiative by Indian government to introduce "BHIM" M- wallet application (i.e. Bharat Interface for Money) which is used in both Smartphone and non Smartphone to encourage the population to use digital Payments tools. In the previous studies, respondents were taken only as Smartphone users.

#### Hypothesis Development

In inspecting and merging the literature, eleven distinctive constructs rose up out of the literature that clarifies the Mobile saving money reception. This study proposed to incorporate these developments to comprehend mobile Payment applications selection from the point of view of Punjab consumers in India. The factors are taken from previous studies for selection of Mobile Payment applications.

#### 1. Performance Expectancy

Performance expectancy is how much utilizing an innovation will give advantages to consumers in playing out certain activities [27]. The person's recognition that adopting mobile payment will accomplish objectives in performing installment undertaking may in this manner that impacts the social aim to adopt mobile payment applications.

Hypothesis 1a: There is a positive relationship between Performance Expectancy (PE) and Behavioral Intention (BI) to use Mobile payment applications.

Hypothesis 1b: There is a positive relationship between Performance Expectancy (PU) and User Satisfaction (US).

Hypothesis 1c: There is a positive relationship between User Satisfaction and Behavioral Intention.

Hypothesis 1d: User Satisfaction mediates the effect of Performance Expectancy and Behavioral Intention.

## 2. Innovativeness

Innovativeness has been demonstrated not just a critical indicator of conduct expected to embrace another innovation, [28] yet, in addition, a forerunner of effort expectancy, compatibility and performance expectancy. The higher the innovativeness levels of a client, the more noticeable the more prominent inclination to feel idealize with the development, and saw the benefits of the advancement.

Hypothesis 2a: There is a positive relationship between Innovativeness (IN) and Behavioral Intention (BI).

Hypothesis 2b: There is a positive relationship between Innovativeness (IN) and User satisfaction (US).

Hypothesis 2c: User satisfaction mediates the effect of Innovativeness and Behavioral Intention.

## 3. Perceived Compatibility

Perceived Compatibility has appeared as an immediate indicator of the conduct expectation to receive another innovation and once in a while if an application isn't compatible with the client then it moves toward becoming an issue for the client [29]. Consumers may see a mobile payment to be more perfect in the event that they see profit in using the mobile payment to play out specific exercises.

Hypothesis 3a: There is a positive relationship between Perceived Compatibility (C) and Behavioral Intention (BI) to adopt mobile Payment applications.

Hypothesis 3b: There is a positive relationship between Perceived Compatibility (C) and User satisfaction (US) to adopt Mobile Payment applications.

Hypothesis 3c: User satisfaction mediates the effect of Perceived Compatibility and Behavioral Intention.

## 4. Perceived Technology Security

Feeling safe in directing money related exchanges with mobile technology is vital to limit concerns in regards to the utilization of innovation to make a mobile payment. Consequently, Perceived Technology Security impacts the consumer's goal to embrace mobile payment applications.

Hypothesis 4a: There is a positive relationship between Perceived Technology Security (PTS) and Behavioral Intentions (BI) to use the technology.

Hypothesis 4b: There is a positive relationship between Perceived Technology Security (PTS) and User satisfaction (US).

Hypothesis 4c: User satisfaction mediates the effect of Perceived Technology Security and Behavioral Intention.

## 5. Effort Expectancy

Effort Expectancy is the level of simplicity related to customer's utilization of innovation [27]. The study also adds to an exact forecast of expectation to embrace another innovation. At the point when clients feel the Mobile Payment is anything but difficult to utilize and does not require much exertion, they have higher desires toward getting the desired performance (Venkatash et al., 2012).

Hypothesis 5a: There is a positive relationship between Effort Expectancy (EE) and Behavioral Intentions (BI) to use the technology.

Hypothesis 5b: There is a positive relationship between Effort Expectancy (EE) and User satisfaction (US).

Hypothesis 5c: User satisfaction mediates the effect of Effort Expectancy and Behavioral Intention.

## 6. Social Influence

Social Influence is how much buyers see that basic others (e.g. Family and Friends) trust they ought to use a particular development. It reflects the effect of ecological factors, for instance, opinions of a user's friends, relatives, and superiors on behavior, when they are sure it may encourage the customer to get mobile payment services.

Hypothesis 6a: There is a positive relationship between Social Influence (SI) and Behavioral Intentions (BI) to use the technology.

Hypothesis 6b: There is a positive relationship between Social Influence (SI) and User satisfaction (US).

Hypothesis 6c: User Satisfaction mediates the effect of Social Influence and Behavioral Intention.

## 7. Facilitating Conditions

Facilitating conditions alludes to purchasers' view of the resources and support variable to play out a variable (Venkatesh et al., 2012). In the event that an operational organization exists supports the user of mobile payment, the behavioral intention to adopt mobile payment applications will increment.

Hypothesis 7a: There is a positive relationship between Facilitating Conditions (FC) and Behavioral Intentions (BI) to use the technology.

Hypothesis 7b: There is a positive relationship between Facilitating Conditions (FC) and User satisfaction (US).

Hypothesis 7c: User Satisfaction mediates the effect of Facilitating Conditions and Behavioral Intention.

## 8. Hedonic Motivation

Hedonic Motivation is characterized as fun or joy received from utilizing the innovation. In the purchaser setting,

Hedonic Motivation has been observed to be an imperative determinant of innovation reception and utilize. As the empowering agent of another type of directing monetary exchanges, mobile payments are pleasant to users, prompting its selection.

Hypothesis 8a: There is a positive relationship between Hedonic Motivation (HM) and Behavioral Intentions (BI) to use the technology.

Hypothesis 8b: There is a positive relationship between Hedonic Motivation (HM) and User satisfaction (US).

Hypothesis 8c: User Satisfaction mediates the effect of Hedonic Motivation and Behavioral Intention.

**9. Price Value**

Price value is a consumers’ psychological exchange off between the apparent advantages of the advancements and the financial cost of utilizing them. The apparent advantages of using an innovation are more noteworthy when the value esteem is more, and the apparent monetary cost is less.

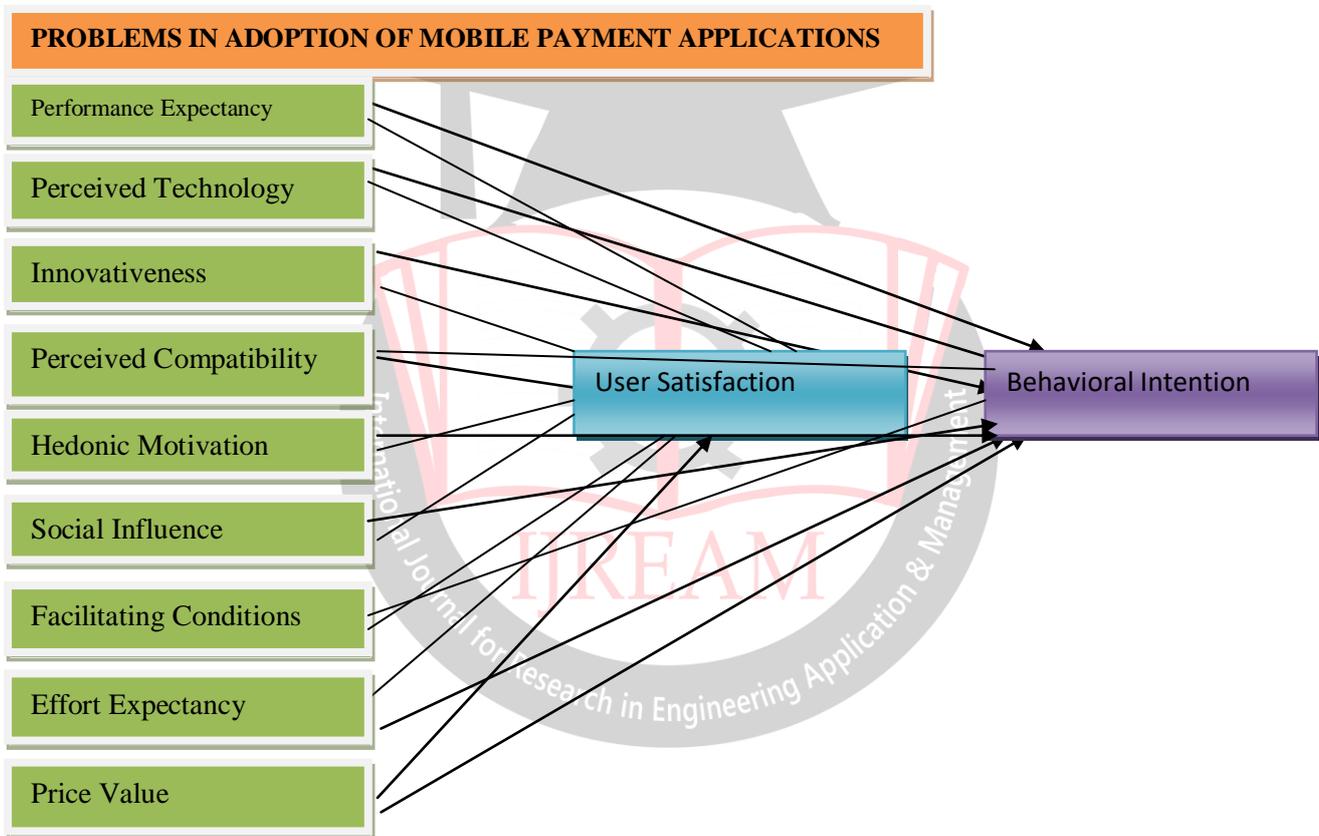
Hypothesis 9a: There is a positive relationship between Price Value (PV) and Behavioral Intentions (BI) to use the technology.

Hypothesis 9b: There is a positive relationship between Price Value (PV) and User satisfaction (US).

Hypothesis 9c: User Satisfaction mediates the effect of Price Value and Behavioral Intention.

The Hypothesized Relationships are represented in Figure 1

Figure 1- Conceptual Model of Problems Faced by Users in the adoption of Mobile Payment Applications.



Source: Developed by Researchers

**IV. RESEARCH METHODOLOGY**

**Sample and Research Setting**

The paper is based on the empirical method of research. 200 Smartphone users were chosen randomly for filling the questionnaire. Data for the study were collected through an online survey from 200 participants, out of these only 130 respondents filled the questionnaire. 70 questionnaires were not considered because of incomplete responses were given by respondents. The sample area is taken only from Punjab region (Ludhiana, Amritsar, Jalandhar, Patiala,) Data was collected from Punjab Region only, 50 Smartphone users

from every 4 districts (Ranking on the basis of Population) was selected by using random Quota sampling technique from Punjab. The primary source of data is used for study with the help of a questionnaire. Validity and Reliability of the questionnaire was checked. The statistical techniques used in the study are exploratory factor analysis, hierarchical regression, and mediator. The Scope of the study was 200 smartphone users and non-smart phone users of urban and rural areas of Punjab.

The demographic profile of the respondents covers age, gender, and education. The Respondents above age 15 were

considered for the collection of data. Among them, 52.81 percent were Female and 47.2 were Male. According to education, 58.4% people were done post-graduation, 25.8% were done with the bachelor's degree, 9% people were doctorate and remaining were a 12<sup>th</sup> grade or less than 12<sup>th</sup>-grade people. The extent of dependent variables is considered on a Likert scale. An ANOVA test was directed to comprehend the distinction in the view of education level  $P > 0.05$  for each of the construct and therefore there was no significant difference between the two genders. The Cronbach's alpha for every one of the constructs in Pilot study is  $>0.6$  as recommended by Hair et al. (2010)[32],[33] and is portrayed in Table 1. This demonstrates that reliability is established based on which we can use the constructs for further analysis.

### Measures

The measuring tool was adopted from the measures developed from a review of the literature and past studies already done. The questionnaire was divided into two parts: the first part consist of a brief demographic profile of the consumers and to which level they are educated in using mobile payment applications. The second part comprises of the variables identified with the issues looked by users, their satisfaction level and the social expectation in the appropriation of mobile payment application. In the end, the respondents were given a Five-point Likert scale extending from 1 "Strongly disagree" to 5 "Strongly agree".

### Data collection

The survey was pre-tested with five specialists who are using M-wallets all through the previous 2 years and five academicians in the innovation field to guarantee that the criteria and content related validity of the instrument is set up. Performance expectancy initially had 4 items, which were lessened to 2 items; Behavioral intention to use initially had 3 items, which were diminished to 2 items, Effort Expectancy initially had 5 items which were decreased to 3 items; User Satisfaction initially had 3 items, which were diminished to 2 items and Innovativeness initially had 3 items, which were lessened to 2 items. The 25 survey things are outlined in Table 1. In the wake of coordinating the pretest of the survey, pilot testing was driven. With the assistance of pilot testing, the reliability of the instrument was set up. After Pilot testing, we went for the extensive scale e-study. After continuous linkages through email and telephone calls with respondents, 98 responses were received, earlier followed by 32 responses further. The Cronbach's Alpha showing the internal consistency reliability of the measures for the eleven factors of Mobile wallet users, US and BI were all close to the prescribed estimation of 0.60 has appeared in Table 1.

### Exploratory Factor analysis

In the present research, a sum of twenty-eight measurements of Mobile wallet reception, User

Satisfaction, and Behavioral intention was recognized from the review of the literature. Principal Factor with varimax rotation was used with every factor to exhibit the factor structure. After seven rotations, the factor framework created an Eleven-factor grid with no cross-loadings. The structures of all the eleven components were steady. The measurement model was accessed for construct reliability (tested by composite reliability and Cronbach's alpha), indicator reliability (tested by checking the loading should be greater than 0.07), convergent reliability (by using AVE), discriminant validity which is found to be satisfactory. The Eigen estimation of all the seven elements was  $>1$ . Table 2 indicates two tests that show the sensibility of your data for structure recognition. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is an estimation that shows the extent of the difference in your variables that might be caused by key components. High values (near 1.0) generally demonstrate that a factor analysis may be useful with your information. If the regard is under 0.50, the consequences of the factor analysis undoubtedly won't be extraordinarily significant. In this investigation, the KMO value is close to 1 i.e. 0.903 which is especially valuable for the study. Bartlett's test of Sphericity (Table 2) tests the hypothesis that your correlation matrix is a personality grid, which would demonstrate that your factors are unrelated and in this way unsatisfactory for structure detection. AVE (Average Variance Extracted) is used as a criterion to test convergent validity, the value greater than 0.5 shows that more than half of the latent variable explains the variance of its indicators. Small values (under 0.05) of the significances level (P-value) show that a factor analysis might be important with analysis. All factors held one noteworthy factor loading with one factor. The most reduced factor loading was 0.505, which is above or equivalent to the 0.50 threshold value. The total variance explained by ten factors is 52.32%. Subsequent to acquiring a factor matrix, an endeavor was made to give some name to the factor loadings as demonstrated in Table 3. The factor solution was observed to be feasible. In spite of the fact that the questionnaire was chosen in light of already created scales through past studies, the questionnaire was required to revise in the light of responses in the pilot study and in this way there was a requirement to put each scale through Exploratory Factor Analysis. Scale Composite Reliability (SCR) is established to be  $>0.7$  in most cases, apart from for Perceived Technology Security, Innovativeness, Hedonic Motivation, Social influence and Facilitating Conditions, which are close to the threshold limit.

## V. DATA ANALYSIS

The hypotheses were tried utilizing Hierarchical Regression as recommended by Baron and Kenny (1986)[34] and Preacher and Hayes (2004)[35]. The association amongst Mobile Payment Applications and Behavioral Intention mediating through the US was inspected. The respondents

were provided some information about the issues they are confronted while utilizing mobile payment applications and making exchanges through their mobile phones. Regarding M-Payment (Ticket booking, online shopping), there is a positive significant behavior of users in the adoption of mobile payment applications. Perceived technology Security is as yet a noteworthy worry for individuals utilizing mobile payment applications for interbank or intrabank cash exchange in spite of SMS alarms for managing an accounting exchange. It was noticed that around the larger number of the respondents utilized mobile payment applications for diverse money activities, for example, requesting of checkbooks, making of adjustment inquiries/Statements etc. It was also watched that people who offer and purchase stocks and securities were active users of mobile wallets since it gives both free and location free innovation utilization. Securities exchange reports, current trade, and loan fees were effortlessly accessible and utilized by shoppers by means of SMS cautions. To conduct hierarchical regression, the assumptions of regression were checked. For checking linearity assumption, scatter plots were procured and the states of the disperse plots were reviewed. This depicted the linearity of the connection between dependent and independent variables. Normality assumption is checked on the basis of descriptive statistics, to be particular, Mean, Median, Mode, Skewness, and Kurtosis. The greatest total estimations of Skewness and Kurtosis were observed to be 1.825 and 5.467 individually, which is well accepted as far as possible [36]. Histograms and normal probability plots were likewise inspected to comprehend whether data were normal or not. The error term conveyance when plotted portrayed a normal curve. To check the Homoscedasticity (equity of means) assumption, residual plots were drawn. The residual plot exhibits that the distinction around the straight line is enduring. Multicollinearity was checked using the Variance Inflation Factor (VIF), which is a normal measure. A VIF value of 1 meant no multicollinearity. Collinearity statistics is portrayed in Table 4; this uncovers multicollinearity does not exist. From Table 4, we can see that the estimation of Durbin-Watson statistics is between 1.5-2.5 as recommended by Hair et al. (2010), and along these lines, there is no autocorrelation. Neither the measurements nor the plots (or histograms) exhibit any deviances past points of restriction prescribed for fulfilling the assumptions of regression analysis. We can see from Table 4 that every one of the Hypotheses, which have been advanced for empirical validation, have been very much supported, aside from the connection between Perceived Technology security (PTS) and User satisfaction (US), which is insignificant. On the off chance that we investigate the way, associating Facilitating conditions (FC) and User Satisfaction (US) to utilize the mobile payment applications, we can see that FC has an extremely solid effect on the US of using mobile wallets. This explains almost 59.3 percent of the aggregate

US variance. The Beta Coefficient of this way is 0.772 and experiential to be statistically significant at  $p < 0.000$ . Likewise, Hedonic Motivation (HM) has a strong impact on User Satisfaction to utilize mobile payment applications. It explains about 56.2 percent of the aggregate User Satisfaction variance. The Beta Coefficient of this way is 0.522 and experiential to be statistically significant at  $p < 0.000$ .

The expansion of the approach of Baron and Kenny (1986)[34] as proposed by Preacher and Hayes (2004)[35] was viewed as more suitable because of the limited sample size in the present study. The consequences of Mediating Regression Analysis output are shown in Table 5. The measurement proposes that Compatibility (C) under the partial mediating impact of User satisfaction (US) is an essential indicator of Behavioral Intentions (BI). This has been checked with the assistance of Sobel Statistics (Sobel, 2013) with a  $p < .05$ , which means that the Mediating Regression is significant. The study finds that the direct effect of Compatibility on Behavioral Intention is significant, while the indirect effect ( $a*b = .7232$ ,  $p < 0.05$ ) is also significant. This demonstrates that Compatibility assumes a partial mediator between the relationship of Performance expectancy and Behavioral Intention. Compatibility represented 53.7 percent of the variability in Behavioral Intention, but when User Satisfaction was introduced as a mediating variable between Compatibility and Behavioral Intention, the variability increased to 72.3 percent, which is almost 20 percent more than as compared to that of the C-BI model. Along these lines, the model enhanced with the introduction of US as a Mediator. Correspondingly, other hypotheses, that is, PE-US-BI, HM-US-BI, EE-US-BI, FC-US-BI, SI-US-BI, IN-US-BI, PV-US-BI, and C-US-BI are also well supported for partial mediation. The relation between Perceived Technology Security (PTS) and User fulfillment (US) is insignificant, and there is no mediation between the relationships of PTS with BI, mediating through the US.

## VI. FINDINGS AND RECOMMENDATIONS

The findings recommend that users ought to see Mobile payment applications as helpful, simple, perfect, and advantageous and a speedier method to direct exchanges, which will upgrade its adoption. The result implies that mobile payment applications usage provides benefits to the users instead of becoming a problem generator for the consumers. No doubt consumers are also facing problems with technology-related security while using Mobile Payment Applications but it may also fulfil the expectations of the individuals to make the work easy and convenient. The results of the study also indicate that the maximum factors were found to be significant in the adoption of mobile payment applications.

The study in like manner investigated whether User Satisfaction assumes an intervening part in the relationship between MPA and BI. The results affirmed that the general impact of Mobile Payment Applications on Behavioral expectation is more grounded when User Satisfaction goes about as a go-between. This outcome accentuates the part of User Satisfaction as a fundamental determinant of Behavioral Intention. Among the Nine factors, novel focus similar to time, effort and investment should be made to upgrade Compatibility and Facilitating conditions, in light of the fact that both these are imperative drivers of User Satisfaction and Behavioral Intention.

## VII. CONCLUSION

### *Theoretical Implications*

This study makes a momentous commitment to the mobile payment application adoption literature. This study empirically tried to test the problems faced by users in using mobile payment applications from both Smartphone and Non-Smartphone users in India. The study empirically tested the relationship between all of the constructs and behavioral intent to adopt mobile payment application. Further, we tried tested the mediating effect of User Satisfaction on mobile payment applications. At last, the basic model of Mobile payment application adoption, having a solid association with BI mediating through user satisfaction (US), has been approved through empirical research. The investigation likewise added to demonstrate that User Satisfaction plays a partial mediating role between adoption factors (i.e. Performance Expectancy Innovativeness, Perceived Compatibility, Social Influence, Hedonic Motivation, Price Value, Effort Expectancy, Facilitating Conditions, User Satisfaction, and Behavioral Intention). The results delineate that Performance technology security (PTS) does not significantly affect BI, which implies consumers of mobile Payment applications don't appear to trust that there is any critical security in using mobile payment applications for directing day by day and managing an account exchange.

### *Managerial Implications*

Users' acceptance of mobile payment applications is of extreme significance to industry experts and researchers. An inside and out an investigation of the components that affect mobile payment applications adoption and by expelling issues looked in using mobile payment applications, therefore, inspire customers to utilize this innovation in a developing business sector is essential. There is a decent measure of the diffusion of mobile phones in India, however, mobile Internet infiltration is still less. Mobile wallets are as yet not utilized broadly by users in India. Subsequently, there is a need to distinguish the components influencing user adoption. From a reasonable ramifications perspective, this study can energize mobile companies and provoke them to take important care while

designing mobile payment applications, on the grounds that the appropriation factors affect both the US and the BI. In view of this outcome, specialist organizations or service providers should attempt to make an additional effort to ensure that they outline a mobile payment application stage that is free from errors and electronic threats. The consequences of this study reveal that Consumers face the significant issue of technology security in using the mobile payment applications, Others factors, for example, perceived Compatibility plays a most vital part in the adoption of mobile payment applications. Different components, aside from perceived technology security, having a significant positive relationship with User satisfaction and behavioral intention to adopt mobile payment applications. The study likewise demonstrates that there is mediator variable (User Satisfaction) which demonstrates that is a partial mediation between dependent and independent variables. One factor such as perceived technology security (PTS) shows that is no mediation between dependent and independent variables. The aftereffects of this study give great proof to consumers and service providers to additionally redo their work rehearses in the zone of mobile payments to upgrade the overall penetration of mobile wallets. Customers strongly keen on adopting mobile payment applications and maintaining ought to create innovative methodologies, which center around improved Performance Expectancy Innovativeness, Perceived Compatibility, Social Influence, Hedonic Motivation, Price Value, Effort Expectancy, and Facilitating Conditions as drivers

Mobile companies should exploit this finding and propose esteem added administrations or services to promote mobile payment application adoption. In the event that users see that a mobile payment applications framework is equipped for playing out their financial exchanges without any error, their view of privacy and danger will decrease and they will be tempted to move over to this new developing arrangement of innovation advancement. A satisfied user will dependably have a positive state of mind towards the adoption of mobile payment applications and also have some behavioral intention to use the service. The market is overpowered with smartphones, which helps in improving the determination of mobile payment applications. In any case, a couple of features of a bit of the lower-end smartphones, including screen determination, a prerequisite for high data, information stockpiling, and shorter battery life, seem to influence the execution anticipation. In this way, organizations, banks need to cooperate with mobile companies to make handsets and must remember the prerequisites of mobile payment applications. Perceived Compatibility of handsets can help to upgrade mobile payment applications adoption as found in the empirical study.

## VIII. LIMITATIONS OF THE STUDY

This study has a few limitations: This study relates to one rising economy and could be stretched out further to other developing markets to draw comparisons and surmising to check whether the Indian experience is interesting or like that accomplished by other developing markets. The study has the limitation that it does not include some of the factors which may consider relevant to know about the problems and challenges faced by users in the adoption of mobile payment applications such as habit construct, customer experience, and trust. Thus these said factors should be included in the study. The findings and suggestions were taken from a particular age group that is from 16-45 onwards years and only done in the rural and urban areas of Punjab region only. In this manner, future study is required to sum up our findings and must incorporate individuals of another age bunch too. A future study could investigate a longitudinal research design to give a superior comprehension of the causality and the interrelationships among factors. An interesting future study can be explored in the area of that how mobile banking is related to mobile payments in future.

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**ANNEXURE**

**Table 1. Reliability statistics**

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.964	.965	25

**Table 2. KMO and Bartlett's Test**

KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Adequacy Measure	of Sampling		.903
Bartlett's Test of Sphericity	Approx. Chi-Square Df		1609.666
	Sig.		.000

**Table 3. Factor Loadings, Cronbach's Alpha, Scale composite Reliability and AVE.**

Component	Items	Factor loading	Cronbach's Alpha	Scale Composite Reliability	AVE
Performance Expectancy	PE1	.872	.825	.822	.765
	PE2	.797			
Perceived Technology Security	PTS1	.569	.694	.683	.393
	PTS2	.681			
Innovativeness	IN2	.706	.623	.671	.632
	IN3	.667			
Hedonic Motivation	HM1	.592	.721	.685	.564
	HM2	.601			
Perceived Compatibility	C1	.505	.793	.702	.785
	C2	.723			
Social Influence	SI1	.618	.642	.667	.548
	SI2	.642			
Effort Expectancy	EE1	.811	.856	.770	.517
	EE2	.635			
	EE3	.729			
Facilitating Conditions	FC1	.790	.724	.668	.739
	FC2	.622			

User Satisfaction	US1	.632	.817	.772	.638
	US2	.741			
Price Value	PV1	.655	.784	.817	.525
	PV2	.577			
Behavioral Intention	BI1	.707	.655	.706	.674
	BI2	.611			

**Table 4. Regression Analysis**

Hypothesis	R	R square	Adjusted R square	F	BETA	P	DURBIN WATSON	VIF
PE-US	0.601	0.361	0.356	72.43	0.601	0.000	1.965	1
PE-BI	0.523	0.274	0.268	48.203	0.523	0.000	1.782	1
US-BI	0.676	0.456	0.452	107.43	0.676	0.000	2.129	1
EE-US	0.737	0.543	0.54	152.26	0.737	0.000	2.087	1
EE-BI	0.694	0.481	0.477	118.85	0.694	0.000	1.816	1
HM-US	0.772	0.595	0.562	188.41	0.522	0.000	2.21	1
HM-BI	0.733	0.537	0.534	148.60	0.733	0.000	2.085	1
IN-US	0.622	0.387	0.382	80.83	0.622	0.000	2.096	1
IN-BI	0.528	0.279	0.274	49.564	0.528	0.000	1.905	1
SI-US	0.448	0.201	0.195	32.18	0.448	0.000	2.061	1
SI-BI	0.597	0.356	0.351	70.82	0.597	0.000	1.507	1
FC-US	0.772	0.596	0.593	188.9	0.772	0.001	2.201	1
FC-BI	0.718	0.515	0.511	135.94	0.718	0.000	2.057	1
PV-US	0.699	0.489	0.485	122.36	0.699	0.000	2.27	1
PV-BI	0.719	0.518	0.514	137.29	0.719	0.000	2.22	1
C-US	0.733	0.537	0.533	148.44	0.733	0.000	2.23	1
C-BI	0.75	0.562	0.559	164.35	0.75	0.000	1.855	1
PTS-US	0.124	0.015	0.007	1.700**	0.065	0.193	1.931	1
PTS-BI	0.65	0.423	0.418	93.768	0.65	0.000	2.102	1

\*\*Insignificant

**Table 5. Mediating Regression Analysis (Baron and Kenny, 1986 & Preacher and Hayes, 2004)**

IV	MV	DV	EFFECTS OF IV ON MV (a)	EFFECTS OF MV ON DV (b)	INDIRECT EFFECT (a*b)	MEDIATION	SOBEL P-VALUE
PE	US	BI	0.498	0.882	0.439236	Partial Mediation	0.000
PTS	US	BI	0.065	0.633	0.047**	No Mediation	0.195*
C	US	BI	0.82	0.882	0.72324	Partial Mediation	0.000
EE	US	BI	0.737	0.882	0.650034	Partial Mediation	0.000
FC	US	BI	0.62	0.882	0.54684	Partial Mediation	0.000
HM	US	BI	0.467	0.882	0.411894	Partial Mediation	0.000
SI	US	BI	0.684	0.882	0.603288	Partial Mediation	0.000
IN	US	BI	0.727	0.882	0.641214	Partial Mediation	0.000
PV	US	BI	0.464	0.882	0.409248	Partial Mediation	0.000

\*P value<0.05, \*\*Insignificant