**Educational Administration: Theory and Practice**
2024, 30(7), 1444-1456
ISSN: 2148-2403
https://kuey.net/

**Research Article**

# "Confirmatory Factor Analysis Of Key Drivers Enhancing The Utility Of Unified Payment Interface (Upi)"

Dr. Devendra Lodha[1*], Dr. Roshni Rawal[2], Dr. Aabha Singhvi[3]

[1*]Associate Professor, Gandhinagar Institute of Management, Gandhinagar University, Gujarat, India.
[2]Associate Professor, SAL Institute of Technology Engineering Research, SAL Education Campus, Science city road, Ahmedabad, Gujarat, India.
[3]Assistant Professor, GIDC ROFEL MBA, Rajju Shroff ROFEL University, Vapi, Gujarat, India.

**Citation:** Dr. Devendra Lodha, et.al (2024). "Confirmatory Factor Analysis Of Key Drivers Enhancing The Utility Of Unified Payment Interface (Upi)", *Educational Administration: Theory and Practice*, 30(7) 1444-1456
Doi: 10.53555/kuey.v30i7.10619

**ARTICLE INFO**

**ABSTRACT**

**Introduction and Background: -** Unified Payments Interface (UPI), one of the remarkable moves of National Payments Corporation of India (NPCI) significantly gaining higher importance in the payment and transfer facilities. The UPI facility allows user to transfer money from one user to another user in the fraction of second. It also allows all time payment and transfer facilities. This study aims to identify the structural relationship between the key determinants (drivers) dominating the UPI and its impact on the Utility (Use) of the UPI.Past few studies revealed that UPI becomes the commonly used platform among the young adults, Dinesh M. Kolte and Dr. Veena R. Humbe (2020).

**Research Methodology: -** This study based on the Primary data of 249 users of UPI as a payment and transfer mode. The dominating UPI applications were Phone Pe, Google Pay and Paytm, which found in this study and also supporting to the output of the research conducted by Gupta et.al. (2020). Further demographic analysis points out that UPI usage tends to be more prevalent among people with higher levels of education UPI has managed to appeal to a wide audience, irrespective of their gender preferences, also observed in the research of Devid & Lucia (2022). The Cronbach alpha measure of internal consistency among the scale variables stand to 0.955, which indicates remarkable result.

**Analysis and Discussion: -** Demographic analysis indicates that, UPI Utility is Higher in Male than female. Further it shows high Utility of UPI services in the Age group of 21-30 Year. Further it also suggests people who completed at least their college education they tend to use more UPI services for the payments and transfers. Finally salaried people and Businessman utility is high in UPI services. High income group indicates High Utility of UPI. Majority of the People using UPI facility for the payment transfers and Routing grocery bill payments. Google pay and Phone Pe are the popular application amongst the UPI user to use UPI services. Further to assess impact of key drivers of Utility of UPI on usage of the UPI, Structural Equitation Modelling (SEM) was performed based on the factors extracted from the previous literatures. The model output shows the output like CMIN/DF stands to 1.432, NFI, RFI, IFI, TLI, and CFI are greater than 0.9 level, which indicates the good fit of model.

**Empirical Evidence: -** The Structural Equitation Modelling (SEM) output shows that, the construct covariances for Key drivers are Ease of Use (0.64), Security (0.87), Rewards and Cashbacks (0.21), Convenience (0.90) and Utility of the UPI (0.57), indicates thatHighest variation in the UPI utility caused by the Convenience, Security and Ease of Use. All factors collectively influencing UPI utility (0.57) which further indicates 57% collective variation observed in the UPI Utility due to theses all variables.This output is in line with the previous research to identify the factors driving UPI utility conducted by Gayathri & Shanmugam (2023).

**Key Words: -** Unified Payments Interface (UPI), NPCI, Google Pay, Ease of Use, Convenience.

## 1. INTRODUCTION:

UPI (Unified Payment Interface) is a mobile application for real time instant transfer payment system. It is a technology that helps to combine multiple banking systems through one application. It can be used by any bank that has participated in it. UPI provides ease for the payment transfer from one bank to another using a single app. [1] Along with that it provides instant, safe and secure method to transfer money without using cash. UPI works on API (Application Programming Interface) technology. [2] UPI has a unique Virtual Payment Address (VPA) that is linked to customer's bank accounts. Customers create it by themselves and can share it with others as well. Through UPI, customers can scan QR code or can pay via contact number as well. Additionally, 400 million phone users in India are enabled to use UPI payment in six different languages like Hindi, Malayalam, Kannada, Bengali, Tamil & Telugu languages. It has been launched by Tone Tag Company. National Payments Corporation of India(NPCI) has developed a platform named Immediate Payment Service (IMPS) for easy and spontaneous transaction. [10]
UPI is regulated by Reserve Bank of India. [3] UPI has emerged as a game changer for India's quest for the future waited to convert it as digital future. It abolishes the requirement to enter bank details and makes it safer and prompter. This feature made it more popular among Indian population.The utility of UPI makes it unique and thesaurus. Even a small vendor to a big businessman, a rickshawwala to flight companies, a dabbawalla to restaurants chains almost everyone is using UPI with ease, irrespective of literacy rate, caste, and geographical region. This paper provides a confirmatory factor analysis of the key drivers that enhance the utility of UPI. Researchers identified various factors with the help of a systematicallyand carefully designed questionnaire. UPI becomes the commonly used platform among the young adults as per the study undertaken by Dinesh M. Kolte and Dr. Veena R. Humbe (2020). This study aims to identify the untouched area of emerging issues of UPI. This study further focuses to identify the structural relationship between the key determinants dominating the UPI and its impact on the Utility of the UPI.

### 1.1. HISTORY, EMERGENCE, AND IMPACT OF UPI:

UPI was usher in in India in 2016. It has a vision to make it available for everyone, a common digital platform, on which they can execute their transaction journey easily and hazel free and can enjoy its services. [4,5,6] Behind the idea of UPI, National Payments Corporation of India (NPCI)is there, it has discovered and developed the form of UPI in India. The Reserve Bank of India (RBI) and IBA (Indian Bank Association) have all the controlling power for UPI. [3]As per RBI's report, long back in year 2011(March),per person non-cash transactions was only six per annum. According to it, at that time, only 10 million retailers were excepting card payment in India, which was a very small part of the whole number. And the major part was yet debarred from it, which is near around 145 million households. The report revealed that it was just because of financial frauds, nuisances, black money, and corruption and so on. NPCI was working on the main aim of assimilatingdifferent systems and various service levels into one unvarying process and system for all retail payment systems for ease with great utility. [7]In year 2012, Under the part of Green Initiative, RBI came up with a vision statement of four years for allegiance of create a reliable, efficacious,obtainable, exhaustive, operationally compatible, explicitly allowed system in India.The Green Initiative's aim was to reduce theconsumption of paper in domestic payment market. For this, in year 2016, UPI was officially launched by the government, under RBI's direction for public use. In addition to that, NPCI emerged as a primary body for developing, implementing, and taking care of newly introduced feasible, easy to use payment system in India. [8]Mr. Sharad Sangi, CEO of Net Magic Solutions stated that UPI has emerged as triumphant deep- tech innovation in India. [7,9]. As per the data of ACI Worldwide and Global Data 2020, UPI's rampant growth make India world's largest instant payment market. Data for it that was existed in year 2020 was 25.5 billion annual transactions. [10] India presented a great example for real time payment market growth through UPI in front of the world. Brazil, Bahrain, Singapore, European Union, and United States are taking motivation from India and trying to implement UPI system into their financial systemfor ease, prompt, cashless transaction. Economist Intelligent Unit Report 2021 stated that after China and South Korea's successful implementation of UPI, India emerged as a leader on the global frontier, as UPI becomes the popular way of hassle-free digital payment system in terms of transaction in India.[10]Use of UPI minimizes workload in banks, because of its unique features of virtual payments with QR code, Virtual Payment Address, VPA and mobile number based, majority of payment has been settled end to end without physical banking interventions, so customer need not to hold money physically in their pocket. Or issue a cheque to the party, here in UPI customer also receive and share the receipt of the transfer of payment instantly. So need not to stand in a long Que of banking cash counters or ATM's.Because of extensive use of UPI, e-banking is no more a buzz word in India.

## 2. LITERATURE REVIEW:

UPI is Innovation and Upgradation in this digital banking model which provides benefits of hassle free payments and transfers without even an account numbers and banking information, user can directly pay or transfer money with the use of VPA, QR code or Mobile numbers which was previously not allowed in any of the digital baking application. So due to these advantages of UPI it is gaining the significant popularity not

only in India but across the globe. Focusing on the previous literature below about the digital banking there are lot of models available to test the Utility of the Digital banking platforms.

(Howcroft et al., 2002) explained that digital banking is the process of entering and doing all the functions of banks on a digital platform, which used to be performed earlier with traditional manner. The popularity of adoption of Electronic Banking (E-banking) by the banks is because of its easy access to the internet, and its cost effectiveness, expediency, and prosperity. These popular digital banking services have everything viz. low-cost, error-free online banking, tax adjustments, e-statements, online bill payments, mobile and tablet banking, mobile checks (Ananda, 2017). People can download these applications and with the help of cloud computing, they can enjoy more liberty to make a fair comparison for features and pricing (Kelly, 2014). (Kotler & Armstrong, 2014) claim that among customers the most popular channels are online and mobile app. According to (Guriting & Ndubisi, 2006) perceived utility is one of the concepts that are working in the surviving literature on internet banking. Pikkarainen et al., (2004) have revealed in their study that perceived utility was the most noteworthy factor affecting Internet banking. According to a study done by (Jaruwachirathanakul & Fink, 2005), perceived value may influence people's decision to use online banking. Numerous other research (Venkatesh & Morris, 2000; Chiu et al., 2005; Luarn & Lin, 2005; Hanafzadeh & Khedmatgozar, 2012; Bong-Keum & Yoon, 2013) have also found a strapping association between perceived utility and adoption of mobile banking. Based on aforementioned background and relevance, this section provides conceptual framework along with a short description about the pertinence of the UPI utility in current context with the help of literature review has been discussed. Although here, few of the work has been represented by the researchers in the field of UPI as review of the literature. Prasanna T R (2023) in his research covers almost every detail regarding UPI's emergence, history, impactand its extensive use in India. He has also discussed the challenges faced by UPI in the system and also the future prospects of UPI. [10]

Peterson K Ozili (2018) has talked about the impact digital finance and financial inclusion in his paper. He talked about digitalization as a provider of affordable, convenient and secure banking service to the majority of customers. He emphasized on the major benefits of reduction and circulation of bad money, quick finance and so on. [11]Junhua Wang (2023) in his paper although not talked about Indian UPI's impact but has discussed about Fintech and the risk analysis of Chinese Commercial Banks. He highlighted the positive development trends of Fintech in above mentioned banks. He also talked about the risk challenges and their mitigation strategies as well. [12]Shailesh Rastogi (et.al, 2021) explored the force and benefits of UPI and its connection with financial literacy and inclusion, with the economic development of poor people in India altogether. They highlighted the importance of UPI in digital bank and digital ecosystem in India.[13]Dr. Deepa Baliyan (et.al, 2023)study shows the significant role of UPI in India for cashless economy with tremendous growth. The paper talked about the popularity of UPI in terms of increasing usage and adoption rate in India. Researchers in this paper, talked about BHIM that is built on UPI platform with simple steps instructions in different languages followed in India, which highlights user friendly usage. The paper also talked about UPI's widely used function i.e. QR code for secure payment.[14]Dr. A Martin (et.al 2023) collected data from 150 users and reached to the conclusion that UPI provides satisfaction level which can influence the intensity of customers to give preference to UPI. They have used several components for it like speed of transaction, perceived ease of use, security, and user service transaction. [15]Devid & Lucia (2022). UPI becomes the commonly used platform among the young adults as per the study undertaken by Dinesh M. Kolte and Dr. Veena R. Humbe (2020).

A study done by Arora, A., & Sharma, P. (2020) was focused on understanding (UPI) extension and its continuance in retail digital payment over the years. The study has been done with the help of (SWOT) analysis format. The result represents that UPI has shown noticeable increase in last few years because customers' make themselves shift from traditional methods to contactless payments. Study shows that in the retail payment sector, the growth of UPI has noteworthy development of digital payments. It identifies and examines the position of the whole digital ecosystem with special focus on UPI's growth areas, strengths, and future prospects. In short, the whole paper is an investigation of India's overall e-payment ecosystem. Further he concluded several factors in their research like, users benefit from the **speed of digital transactions** and **expediency** through UPI due to its easy accessibility via smart phone. [16]

The following are few literatures on the digital payment and transfer mechanism based on which the factors for the study was identified and constructed the structural model to test on the UPI services. The literature taken here are from the similar field e.g., digital payment and transfer services. In earlier research, it has been found that there is a significant and positive association between relative advantage and utility intention of any service or product (Kaur et al., 2020).

Thus, we anticipate that the relative advantage of UPI over other forms of payments in terms of speed, efficiency, and effectiveness has a positive association with intention to use (IU). Therefore, we proposed:

**$H_1$ = UPI Utility depends upon the Relative advantage including rewards.**

There are many studies conducted for the digital services in which compatibility was one of the factors considered to have positive relationship with the digital services usage which was also concluded in the research of Kaur et al., 2020; Oliveira et al., 2016. Even, Agarwal & Karim, 2015 have also found mobile coupons and their utilization as one of the major factors in their study. Chung, Chen, & Kuo, 2015, has found mobile English vocabulary learning resources, Agag & El- Masry, 2016, found motives to buy travel online and

WOM. In the study of Choudrie et al., 2014, found that compatibility is a vigorous foresee of intention to embrace and utilize digital payment.

Some studies done by researchers like Kaur et al, 2020 stated that the purpose of the customers to choose UPI is to depend on its affinity with their wants, standards, understandings, and beliefs.

This can also be explained as the usage intention of UPI would be high if it is well-suited with the way of life, choice, and current situations of potential users. Based on the above, we proposed:

**$H_2$ = UPI Utility depends upon the User convenience and compatibility**

Technology accepts model (TAM) known for acceptance of technology in the form of prediction, which focuses on the behavioralpurpose and role of technology in it. It also emphasis on the ease of use of any product. It stated that user can be ready to accept any product or services, if it is easy to use. A lower level of complexity would help to adopt new products by potential users. A study done by Longyara & Van, 2015 states that if someone wants to adopt innovation successfully, it is totally depending on the level of complexity of that innovation. Tan, Ooi, Leong, & Lin, 2014, found in their study that low complexityheartens users to embrace the mobile based products. In this case, PeoU has created a positive effect and connection with behavioral intention to use mobile learning.Another study by Agag& El-Masry, 2016, revealed that PeoU has a positive impact on users' attitude on the online travel community.Agarwal & Karim, 2015, conducted a study on mobile coupons, revealed that PeoU has a positive impact on behavioral intention towards mobile coupon redemption. A study conducted Longyara & Van, 2015 find that there is no relationship between users' attitude and complexity. Contrary to this, Cigdem & Topcu, 2015, found in learning management system that the indirect effect of low complexity on users' intention. Kaur et al., 2020, found in their study of mobile based services that if the low level of complexity exists, it encourages users' intention and has a positive association with intention to use it. We can say that as high complexity would not encourage users' intentions.

So, we proposed:

**$H_3$ =UPI Utility is dependent on the Ease of Use**

The research conducted by Ioansis (2011)described that the information system security in scope of Internet banking in Greece.Md. Shoriful (2014) revealed in his study that managers may not make an efficient use of theprocess of risk management, even if information system managers have everything like security risk management methods, tools and techniques. The paper examines the security challenges mobile payment system and mobile banking. Researchers identify the key challenge in form of user's lack of confidence for security aspect of the services provided by mobile banking. Rajpreet et al., (2013) revealed in their paper that RBI is recommending various security standards and technologies for safe internet banking experience.

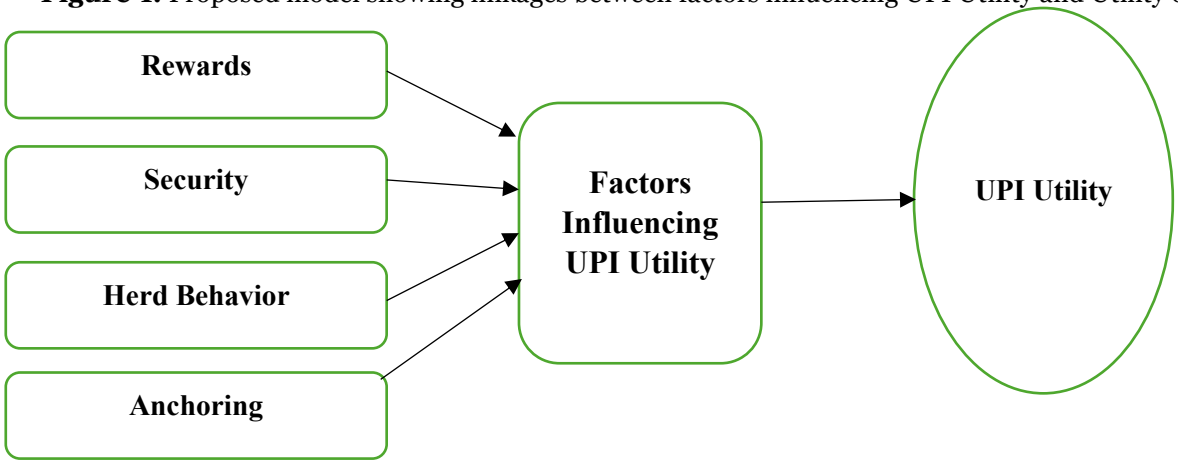
S.T Bhosale (2012) in his study author proposed a novel model for biometric technology for operating ATM which replaces card system. Here these past literatures try to conclude that, Security plays a pivotal role in the utility of online banking or mobile banking, similarly UPI sharing the same concept of transferring money virtually from one account to another based on mobile number, QR Code or VPA. So user also focusing the security aspects too while using the UPI, so the study constructed the following hypothesis to understand the contribution of security in the utility of the UPI Service.

**$H_4$ = UPI Utility depends upon the Security**

The researcher done many studies to establish the relationship between the utility of the digital banking facilities and factors influencing utility. These factors in wide range like Ease of Use, Benefits and Rewards, Convenience and Compatibility, Security etc. So here in this study too researcher testing the influence of the various factors discussed above on the usage of the UPI facility. Further this study proposes the structural model based on the various literature available there are variety of factors influencing the utility of digital baking platform but specific to UPI there are few key factors were identified which drives the utility of the UPI, so the following model proposed to continue to study further,

### 2.1. PROPSED MODEL BASED ON THE PAST LITERATURE:

**Figure-I:** Proposed model showing linkages between factors influencing UPI Utility and Utility of UPI.




Source: Authors' creation based on Literature Review

The model shown in Figure-I depicts the relationship between the Utility of the UPI and various factors that have been considered by the user of the UPI while usage of UPI services through the different UPI applications. The mentioned model was derived based on the past studies and identified several factors which could have influence on the UPI Utility, Primarily this model drawn to understand the relationship and linkages between key influencing factors and UPI utility. The key influencing factors further divided in the four most important parts from the user point of view which includes Ease of Use, Compatibility and Convenience, Rewards and Benefits, and Security, these are the crucial parameter to study and identify the utility of any of the digital banking platform so study further testing the same model on the data collected through the respondents, who are the actual users of the UPI application.

## 3. RESEARCH METHODOLOGY:

This study basically adopted a cross sectional route as it's a study of two different filed e.g., Banking and Technology, this study contribute to the new edge technological innovations to understand the user traits and various factors that plays a crucial role in the success of any of the digital platform.

### 3.1. OBJECTIVE OF THE STUDY: -

**The main objective of this study is to identify the Key factors influencing the UPI Utility.**

Further, In order to achieve the mentioned objective in this study, researcher have identified certain factors based on the past literature. These are the four common leading factors identified in the past literature and concluded as a most influencing to the UPI utility of a typical UPI user, The first factor identified was Security, there are various studies conducted on the security aspects of e-banking, Ioansis (2011) and mobile banking Rajpreet et al., (2013) in which they revealed security is a major concern for the user. The second factor explored from the many literature was Rewards and benefits, the studies conducted by several researchers found that aim of the end users affected by the relative advantage(Tan, Ooi, Leong, & Lin, 2014), e.g., e-learning systems (Agudo-Peregrina, Hern´andez-García, & Pascual-Miguel, 2014), mobile coupons and rewards (Agarwal & Karim, 2015) and mobile entertainment (Leong, Jaafar, & Sulaiman, 2017). The third factor was Ease of use, Longyara & Van, 2015 states that if someone wants to adopt innovation successfully, it is totally depending on the ease of use. Further, the last most studied factor from the previous literature was convenience and compatibility, was one of the factors considered to have positive relationship with the digital services usage which was also concluded in the research of Kaur et al., 2020; Oliveira et al., 2016. Even, Agarwal & Karim, 2015.

Research concluded based on Primary data collected directly from the respondent, a systematic questionnaire has been prepared after thorough study and research. For finding the appropriate sample size. Researchers looked at types rating scale used in the instruments. Sample of 270 respondents were targeted initially to collect the data through the structured close ended questionnaire including demographic details and few factors with the rating questions, the question was qualitative in nature so 5-point rating Likert scale [21] was used which indicated "Strongly Agree" to "Strongly Disagree" categories. Out of the total 270 respondents targeted only 256 responded, from which more 7 responses were deleted because of erroneous and improper responses.So, study was concluded based on 249 valid responses collected directly from the respondents. UPI data related to History and inception were collected from the websites of the different reputedauthorities of India.Moreover, to that various Journal article were studied to collect the literature from the past studies in the related area which includes literature on Mobile banking platforms and other digital banking platforms. [22]

Further Study was analyzed demographic data of respondents and tested the proposed model to understand the linkages between various factors influencing the utility of the UPI and Utility of the UPI. This analysis was performed and concluded using the structural equation modelling (SEM) analysis [23] to understand the structural relationship among the factors driving UPI utility. Further to assess impact of key drivers of Utility of UPI on usage of the UPI, Confirmatory Factor Analysis (CFA) model [24] was constructed based on the various factors identified from the previous literatures. The Proposed model was depicted in the Figure-1.

## 4. DEMOGRAPHIC ANALYSIS AND UPI UTILITY:

An overview of the demographics of UPI [25] users can give a good indication about who uses the service and tell us about the major trends and regularities. Here's a brief look at about overall demographic conclusion of the UPI users mentioned in the following Table-1: The survey depicts a picture where men and women stand almost equal among UPI users, but with females taking a slight lead over males. The presence of both genders in almost equal proportion is indicative that UPI has managed to appeal to a wide audience, irrespective of their gender preferences. Most of the users who use UPI services are from 21 to 30 years old, accounting for more than half of the total number of users. This age distribution pattern underscores the appeal of UPI to young adults, showing their ease with digital technologies and liking for easy payment options. There is a large number of UPI users who have completed postgraduate education. The next most frequent are individuals with professional degrees.This points out that UPI usage tends to be more prevalent among people with higher levels of education, likely due to their exposure and experience with digital platforms as well as financial

systems. The biggest occupational group among UPI users consists of salaried individuals, followed by those engaged in numerous other diverse occupations.

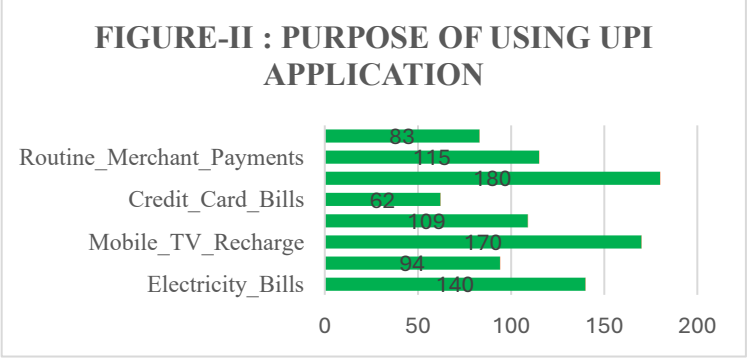
| **Table-1 Demographic Analysis of the UPI Users** | | | | |
|---|---|---|---|---|
| **Gender** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| Male | 120 | 48.2 | 48.2 | 48.2 |
| Female | 129 | 51.8 | 51.8 | 100 |
| **Age (In Years)** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| Below 20 Years | 11 | 4.4 | 4.4 | 4.4 |
| 21-30 Years | 136 | 54.6 | 54.6 | 59 |
| 31-40 Years | 63 | 25.3 | 25.3 | 84.3 |
| 41-50 Years | 25 | 10 | 10 | 94.4 |
| Above 50 Years | 14 | 5.6 | 5.6 | 100 |
| **Education Qualification** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| Up to Schooling | 3 | 1.2 | 1.2 | 1.2 |
| Up to Graduation | 47 | 18.9 | 18.9 | 20.1 |
| Postgraduate | 156 | 62.7 | 62.7 | 82.7 |
| Professional Degree Qualified | 41 | 16.5 | 16.5 | 99.2 |
| Doctoral Degree Holder | 2 | 0.8 | 0.8 | 100 |
| **Occupation** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| Salaried | 106 | 42.6 | 42.6 | 42.6 |
| Businessman | 10 | 4 | 4 | 46.6 |
| Professional | 18 | 7.2 | 7.2 | 53.8 |
| Retired | 6 | 2.4 | 2.4 | 56.2 |
| | 103 | 41.4 | 41.4 | 97.6 |
| Others | 6 | 2.4 | 2.4 | 100 |
| **Annual Income (₹)** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| Up to Rs 2,00,000 | 68 | 27.3 | 27.3 | 27.3 |
| Rs 2,00,001- Rs 4,00,000 | 51 | 20.5 | 20.5 | 47.8 |
| Rs 4,00,001- Rs 6,00,000 | 42 | 16.9 | 16.9 | 64.7 |
| Rs 6,00,001- Rs 8,00,000 | 30 | 12 | 12 | 76.7 |
| Above Rs 8,00,000 | 58 | 23.3 | 23.3 | 100 |

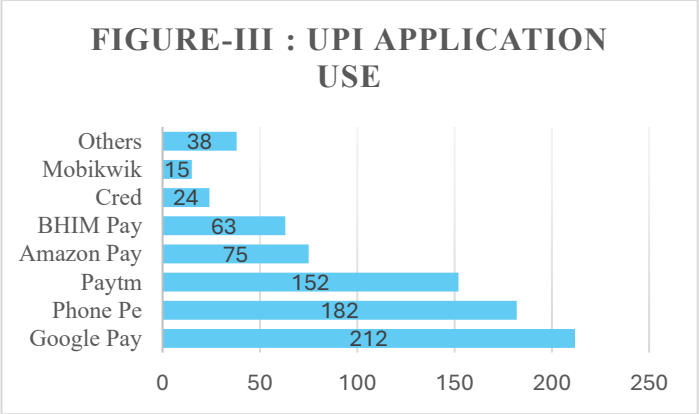
*Source: - Author's Analysis from Primary Survey*

This demonstrates that UPI is broadly applicable across different sectors of the professional world, serving both wage earners and self-employed professionals. The classification of UPI users into different income brackets shows that usage is common among individuals at various income levels. It indicates that UPI caters to people with varying financial capabilities— providing an easy and cost-effective payment system suitable for low-income as well as high-income earners.In general, the demographic study emphasizes UPI's extensive reach and its use as a flexible digital payment system in India. The availability plus ease of use, and even the participation factors of UPI have made it widely accepted across all demographic sectors; people prefer using it as a mode of payment for financial transactions. This piece of information can guide future strategies towards increasing UPI uptake and thereby ensuring wider accessibility to finance among those who have been underserved with these services.

### 4.1. PURPOSE OF THE UPI APPLICATION UTILITY

There are Various purposes of using the UPI came across during the survey but the few mentioned here are showing the highest utility amongst the respondents, as mentioned in the Figure-II, the highest use of UPI have been done by the respondents for Money transfer, The other utility like Mobile and DTH recharges stand on the second place. Further merchant payment and grocery bill payment also highlight the use of the UPI application, as it also been chosen by the respondents. So, looking at the use of UPI application, the highest use comprises of the Money transfer, Mobile and DTH recharges, Grocery bill and Electricity Bill Payments.





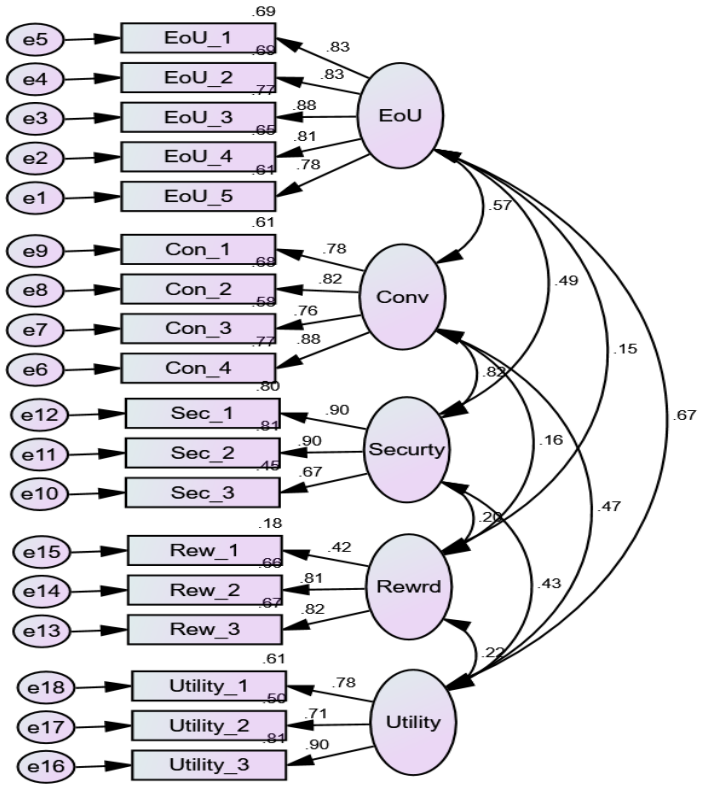

### 4.2. UPI APPLICATION UTILITY

the mentioned Figure-III gives an idea about the usage of the UPI application, the Google pay usage as a UPI application is highest amongst all UPI application, The Phone pe and Paytm following the Google pay, Mobi Kwik and Cred needs to do more penetration to attract the UPI Market as their market share amongst the UPI application is low in terms of routine utility bill payments and money transfer. The mentioned Figure-III shows the utility of UPI application as an overall usage of UPI facility in India.

## 5. PROPOSED CFA MODEL TESTING AND DISCUSSION:

The Confirmatory Factor Analysis or measurement model aims to establish linkages between the items' measurement and their underlying latent constructs, which later confirmed through statistical testing. There are two methods are used to evaluate the CFA model. The goodness-of-fit indices are observed to evaluate the overall proposed research model fit. Figure IV depicts the path diagram of the measurement model.

**Figure-IV: path diagram of the measurement model.**




***Source: - Author's Analysis***

### Reliability and Validity of the Measurement Model

The statistical examination of the research model included assessments of Composite Reliability (CR) [26], construct reliability [27], factor loadings[28], convergent validity[29], critical ratio (t-value)[30], and the correlation of inter constructs namely Average Variance Extracted (AVE) [31] to gauge its precision. Table 2 presents the

outcomes of reliability[32] and convergent validity[33] of the constructs used in this study. The evaluation of reliability is based on the standardized loadings of the factors. The factor loading values of each construct should be greater than the threshold value of 0.6.

**Table-2: Validity and reliability of measurement model**

| Construct | Label | Validity and Reliability Values | | | |
|---|---|---|---|---|---|
| | | Standardized Factor Loading Values | Cronbach's alpha (α) values | CR | AVE |
| **Ease** | Ease_of_Use_1 | 0.83 | 0.914 | 0.915 | 0.683 |
| | Ease_of_Use_2 | 0.83 | | | |
| | Ease_of_Use_3 | 0.88 | | | |
| | Ease_of_Use_4 | 0.81 | | | |
| | Ease_of_Use_5 | 0.78 | | | |
| **Convenience** | Convenience_1 | 0.78 | 0.885 | 0.887 | 0.662 |
| | Convenience_2 | 0.83 | | | |
| | Convenience_3 | 0.76 | | | |
| | Convenience_4 | 0.88 | | | |
| **Rewards** | Rewards_CB_1 | 0.43 | 0.716 | 0.741 | 0.505 |
| | Rewards_CB_2 | 0.83 | | | |
| | Rewards_CB_3 | 0.80 | | | |
| **Security** | Security_1 | 0.89 | 0.857 | 0.864 | 0.684 |
| | Security_2 | 0.90 | | | |
| | Security_3 | 0.67 | | | |
| **Utility** | Utility_1 | 0.89 | 0.832 | 0.841 | 0.640 |
| | Utility_2 | 0.71 | | | |
| | Utility_3 | 0.79 | | | |

***Note: AVE – "Average Variance Extracted", CR – "Composite Reliability"***
*Source: - Author's Analysis*

The range of factor loading values attained in this study is from 0.67 to 0.90. The *t*-values (critical ratios) should be 1.96 and are statistically significant at a p-value of 1 per cent level Hair *et al.,* (2019).

## Discriminant Validity

In 1981, Fornell and Larcker introduced a method to assess measurement model [49] fit through the discriminant validity technique. According to them, the method compares the square root of the AVE[50] among different latent constructs with the corresponding intercorrelation of different construct values. The calculation for the discriminant validity represented in the following table 3.

**Table-3: Discriminant validity**

| | CR | AVE | MSV | ASV | Ease | Convenience | Rewards | Security | UPI Utility |
|---|---|---|---|---|---|---|---|---|---|
| **Ease** | 0.915 | 0.683 | 0.449 | 0.259 | 0.825 | | | | |
| **Convenience** | 0.887 | 0.662 | 0.672 | 0.315 | 0.567 | 0.812 | | | |
| **Rewards** | 0.741 | 0.505 | 0.048 | 0.034 | 0.146 | 0.162 | 0.707 | | |
| **Security** | 0.864 | 0.684 | 0.672 | 0.284 | 0.491 | 0.822 | 0.200 | 0.825 | |
| **UPI Utility** | 0.841 | 0.640 | 0.449 | 0.226 | 0.668 | 0.473 | 0.223 | 0.434 | 0.800 |

**Note: In bold diagonal values represent the square root of AVE, while off-diagonal values represent the inter-construct correlations**

In the matrix representation, diagonal elements represent the AVE square root, while off-diagonal elements relate to intercorrelation constructs. The obtained correlations show that all inter-construct correlation values are smaller than their respective AVE square root values. Additionally, the AVE square root values in this study surpass the correlations among constructs, indicating a high value of discriminant validity among the different constructs in the structural model. Table 3 portrays the outcome of the analysis of discriminant validity using Frornell and Larcker's criteria.

## Assessment of Regression Path Coefficients

The structural model in this study encompasses 18 items, which are measured by five distinct latent constructs, namely **Ease**, **Convenience**, **Rewards**, **Security**, and **UPI Utility**. The statistical assessment of the structural equation model specifications reveals statically a goodness of fit measures with an obtained chi-square value is 1.432, which is less than the suggested accepted value of 3 and is found significant at p-value <0.001. The key Model fit indices values with the acceptance standards mentioned herein table 4. The SEM

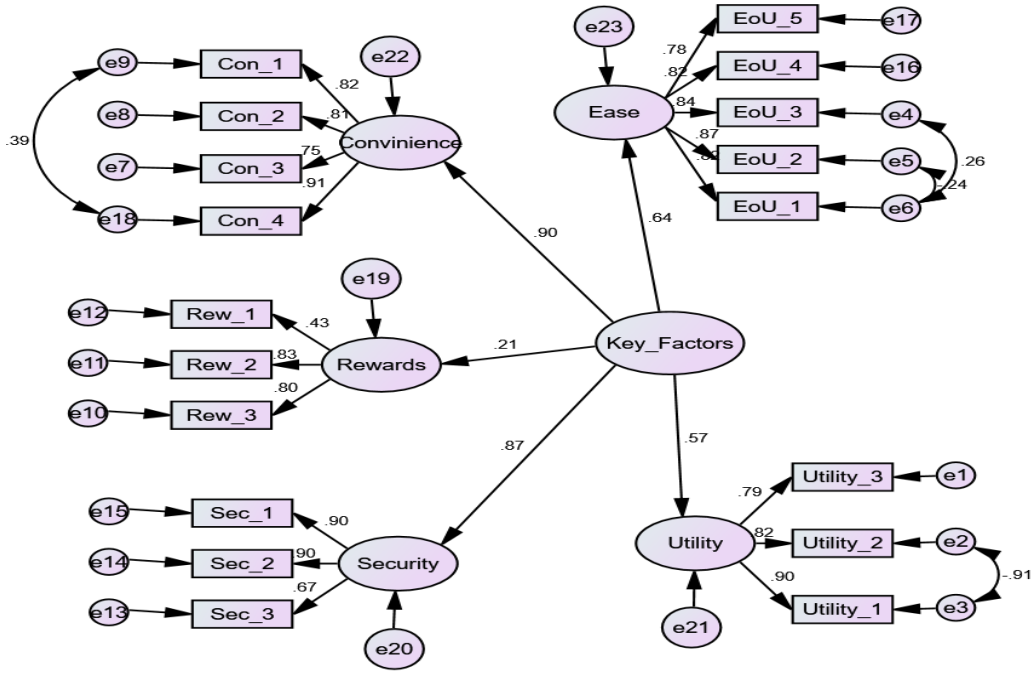
output indicates that the default model provides a good fit to the data, with acceptable values across various fit indices, such as the CMIN/DF, GFI, AGFI, NFI, CFI, RMSEA, and others.

### Goodness-of-Fit Indices for the Measurement Model

The findings from the CFA that indicate the obtained chi-square value for the model is 180.432 with 126 degrees of freedom and CMIN/DF ratio of 1. 432. it is below the threshold of 3. The Normed Fit Index (NFI), Relative Fit Index (RFI), Incremental Fit Index (IFI), Tucker-Lewis Index (TLI), and Comparative Fit Index (CFI) for the default model are all above 0.9, with values of 0.936, 0.922, 0.980, 0.975, and 0.980 respectively. Which indicates the better model fit. The RMSEA value for the default model is 0.042, which is below 0.05 indicates a good fit (Hair *et al.*, 2019). The PCLOSE value above 0.05 confirms this. The Parsimony Ratio (PRATIO) is 0.824, the Parsimony Normed Fit Index (PNFI)[44] is 0.771, and the Parsimony Comparative Fit Index (PCFI) [45] is 0.807. These values suggest a good balance between model fit and simplicity. The GFI is 0.926, and the Adjusted Goodness of Fit Index (AGFI)[46] is 0.900, both of which are above the acceptable threshold of 0.9, indicating a good fit. The AIC for the default model is 270.432, with the Browne-Cudeck Criterion (BCC)[47] being 277.899, the Bayesian Information Criterion (BIC) [49] being 428.717, and the Consistent AIC (CAIC) being 473.717. Lower values indicate a better fit, with the default model having lower values compared to the saturated and independence models.

The ECVI for the default model is 1.090, with a 90% confidence interval lower than 1.251. This suggests that the model has good predictive power. The RMR for the default model is 0.112, suggesting a reasonable fit.

**Figure-IV: Structural Measurement Model.**




Source: - Author's Analysis

### Discussion of Results of Structural Model

The purpose of the present study explores the key factors influencing the utility of UPI in Ahmedabad region. The research tested the certain well-known variables from technology acceptance theory TAM [34] with the constructs namely Ease, Convenience, Rewards and Security was taken as an independent variable and its influence on the UPI Utility in context of UPI users of Ahmedabad. The hypothetical relations proposed in the research model were tested by the structural model as proposed in the research framework in Figure 1. The results of path coefficients of regression are presented in Table 4.

The hypothetical relationships between various latent constructs confirmed that construct Ease had a significant influence on UPI Utility (β=0.664, *t*-values 6.968, significant at *p* <0.000); and construct convenience had (β=0.523, *t*-values 5.702, significant at *p*<0.000), therefore formulation hypothesis H1 and H2 were supported. Rewards also had a significant influence on UPI Utility (β= 0.125, *t*-values 2.631, significant at *p*<0.05); this reward construct comparatively less influencing then other construct.

**Table-4: Results of Hypothesis testing based on CFA.**

| Hypothesis | Hypothesized Direction | | | Standardized Regression Weight (β) | Standard Error (S.E) | Critical Ration (t-value) | p-value | Decision on Hypothesis |
|---|---|---|---|---|---|---|---|---|
| H1 | Ease | <--> | Utility | 0.664 | 0.095 | 6.968 | *** | Supported |
| H2 | Convenience | <--> | Utility | 0.523 | 0.092 | 5.702 | *** | Supported |
| H3 | Rewards | <--> | Utility | 0.125 | 0.047 | 2.631 | 0.009 | Supported |
| H4 | Security | <--> | Utility | 0.485 | 0.09 | 5.365 | *** | Supported |

Source: - Author's Analysis

Further Security is one of the vital parameters and the result also indicates that it had significant relationship with UPI Utility (β= 0.485, *t*-values 5.365, significant at *p*< 0.000). Therefore, the structural model results of this study confirmed that the formulated H1, H2, H3 and H4 were supported as their respective p-values were statistically significant at 1 per cent and 5 per cent levels.

Peterson K Ozili (2018) has talked about the impact digital finance and financial inclusion in his paper. Shailesh Rastogi (et.al, 2021) explored the impact and benefits of UPI and its connection with financial literacy. Dr. Deepa Baliyan (et.al, 2023) study shows the significant role of UPI in India for cashless economy with tremendous growth. Dr. A Martin (et.al 2023) collected data from 150 users and reached to the conclusion that UPI provides satisfaction level which can influence the intensity of customers to give preference to UPI. Study undertaken by Devid & Lucia (2022) have studied several components of UPI like speed of transaction, perceived ease of use, security, and user service transaction. Few studies undertaken by Dinesh M. Kolte and Dr. Veena R. Humbe (2020). & Arora, A., & Sharma, P. (2020)[35] had focused on the popularity and usage of UPI services. The mentioned literature cited the adoption, popularity, and growth of UPI services as a New digital baking era. These popular digital banking services have everything viz. low-cost, error-free online banking, tax adjustments, e-statements, online bill payments, mobile and tablet banking, mobile checks (Ananda, 2017). (Kotler & Armstrong, 2014) [36] claim that among customers the most popular channels are online and mobile application. According to the Technology Acceptance Model (TAM), Utility is one of the elements affecting the obtainment of novel technologies, according to empirical data from (Purohit & Arora, 202; Neugen, 2020; Davis et al., 1989)[37].

These popular digital banking services have everything viz. low-cost, error-free online banking, tax adjustments, e-statements, online bill payments, mobile and tablet banking, mobile checks (Ananda, 2017). (Kotler & Armstrong, 2014) [36] claim that among customers the most popular channels are online and mobile application. According to the Technology Acceptance Model (TAM), Utility is one of the elements affecting the obtainment of novel technologies, according to empirical data from (Purohit & Arora, 202; Neugen, 2020; Davis et al., 1989) [37]. Here in this research, study aim to test the influence on the Utility of UPI services, which is one of the innovations of the digital banking service which is used through the mobile platform. There are lot of variables that can influence the utility of UPI but out of those factor study identified several key variables which bears the highest influence on UPI utility and tried to establish the UPI utility Model.The output of the model is as under mentioned in table 3.

**Table-3: Key Model Indices**

| **Fit Indices** | **Limit** | **Measurement model Result** |
|---|---|---|
| **CMIN/DF** | ≤3.000 | 1.432 |
| **GFI** | ≥0.90 | 0.926 |
| **AGFI** | ≥0.80 | 0.900 |
| **NFI** | ≥0.90 | 0.936 |
| **CFI** | ≥0.90 | 0.980 |
| **RMSEA** | ≤0.08 | 0.042 |

Source: - Author's Analysis

This suggests that the model is effective in explaining the key drivers enhancing the utility of the Unified Payment Interface (UPI). The results indicate that the model is both parsimonious and predictive, making it a robust tool for understanding the factors contributing to UPI's utility.

The most crucial variable for the UPI utility is **convenience**, This variable also discussed in theory of Technology accepts model (TAM) known for acceptance of technology in the form of prediction, which focuses on the behavioral purpose and role of technology in it. Longyara & Van, 2015 states that if someone wants to adopt innovation successfully, it must be convenient for them to use. If technology developed with the low level of complexity, it is convenient for the user to adopt it. Cigdem & Topcu, 2015, found in learning management system[38] that the indirect effect of low complexity on users' intention. Kaur et al., 2020, found in their study of mobile based services that if the low level of complexity exists[39], In this study also researcher tried to identified convenience as one of the parameters which become the key influencing variable and result shows that, convenience had a significant influence on the Utility of the UPI (β=0.523, *t*-values 5.702, significant at *p*<0.000). convenience was also studied in the research undertaken by (Yang et al., 2012)[40], (Kaur et al.,

2020) [39] and (Tan, Ooi, Leong, & Lin, 2014) [41], they concluded significant relationship between Convenience and Utility. Further Ease of use in technological adoption plays a most crucial role here in this study also Ease of Use come out as a major factor influencing UPI Utility with the model values (β=0.664, *t*-values 6.968, significant at $p$ <0.000). Ease of use was also studied by Longyara & Van [42], 2015 stated that if someone wants to adopt innovation successfully, it is totally depending on the ease of use, further studies undertaken by Kaur et al., 2020; Oliveira et al., 2016. Even, Agarwal & Karim[43], 2015) mentioned ease of use is one of the key determinants of Utility. Rewards are important at user perspective which can enhance the utility of UPI platform, here in this study influence of the rewards found in the result (β= 0.125, *t*-values 2.631, significant at $p$<0.05). This has also been identified the studies undertaken by (Tan, Ooi, Leong, & Lin, 2014), (Agudo-Peregrina, Hern´andez-García, & Pascual-Miguel, 2014), (Leong, Jaafar, & Sulaiman, 2017), they analyzed that, rewards and relative advantage are crucial driver of utility. On the contrary, it was comparatively lower influence than security (β= 0.485, *t*-values 5.365, significant at $p$< 0.000)., Security was also one of the important factors in digital baking as highlighted by the studies undertaken by Ioansis (2011) and mobile banking Rajpreet et al., (2013) in which they revealed security is a major concern for the user.

## CONCLUSION: -

This study entails the story of UPI adoption in India, India becomes the leader and pioneer in the implementation and early adoption and growth of the UPI. There are versatile factors affecting to adoption of a new technology. The adoption entirely depends on the Utility of the UPI. So, this study tried to reveal the empirical evidence on the key drivers of UPI Utility.

The first part of study reveals several facts of UPI based on the demographic characters and UPI usage. Table-1 highlight the demographic analysis depicts a picture that, men and women stand almost equal among UPI users, but with females taking a slight lead over males.The presence of both genders in almost equal proportion is indicative that UPI has managed to appeal to a wide audience, irrespective of their gender preferences.UPI services are from 21 to 30 years old, accounting for more than half of the total number of users. This also pointed that UPI usage tends to be more prevalent among people with higher levels of education.The biggest occupational group among UPI users consists of salaried individuals, followed by those engaged in numerous other diverse occupations. Further, Figure-II shows, the highest use of UPI have been done by the respondents for Money transfer, The other utility like Mobile and DTH recharges stand on the second place.Figure-III gives an idea about the usage of the UPI application, the Google stands as a leading used UPI application followed by Phone pe and Paytm.

Second part of the study focus to test the model of UPI Utility based on the key influencing variables affecting to the UPI utility, The Confirmatory Factor Analysis aims to establish linkages,Figure: V demonstrated the primary factors that improve the Unified Payment Interface's (UPI) usefulness. The model determines a number of important factors, including Convenience, Ease, Rewards, Security, and Utility itself. The initial structural path model represents the internal consistency of the variables considered for the study which bears the sufficient association with each other, the value ranging from 0.67 to 0.90.Study confirmed convenience, ease of use and security as a highly influencing factors with the beta value of 0.523, 0.664,0.485 respectively. Indicating the positive influence of these factors as mentioned in the table 4. Further table-2 & table-3 confirms the above factors with good reliability and validity scores. On the contrary factor named Reward shows the less significance than rest of three factor as it loads with the beta value of just 0.125. So overall it can be clearly concluded that, this model is fit for the realistic application.

## REFERENCES:


1. Kumar, A., Choudhary, R. K., Mishra, S. K., Kar, S. K., & Bansal, R. (2022). The growth trajectory of UPI-based mobile payments in India: Enablers and inhibitors. Indian Journal of Finance and Banking, 11(1), 45-59.
2. Grohmann, A., Klühs, T. &Menkhoff, L., "Does financial literacy improve financial inclusion? Cross country evidence", World Development,Vol.111,pp.84-96,2018.DOI:10.1016/j.worlddev.2018.06.020.
3. KUMAR, M. P. S., & Sudheer, M. C. B. A Study On Growth Of UPI (Unified Payment Interface) In Digital Empowerment. Financial Management & Marketing Management, 323.
4. Panse,C.,S.,Sharma, A.&Dorji, N.,"Understanding consumer behaviour towards utilization of online food delivery platforms", Journal of Theoretical and Applied Information Technology, Vol.97 No. 16, pp.4353-4365,2019.
5. Popova, L. V., Daeva, T. V., Dugina, T. A., Melikhov, V.A.,& Chekrygina, T.A.,"Digital Innovn .in Trdnl. Svcs. of Cr. Cooperative. In Frontier Info Tech. & Sys. Res. In Cooperative Eco.", Springer,Cham.,pp.477-485.2021.DOI:10.1007/978-3-030-57831-2_50.
6. Rastogi, S. & Ragabiruntha, E., "Financial inclusion and socioeconomic development: gaps and solution", International Journal of Social Economics, Vol. 45 No. 7,pp.1122-1140,2018. DOI:10.1108/IJSE-08-2017-0324.
7. “The Origin of UPI: Road to a cashless society” by Dhriti Datta, updated on 01-Jun-2020, https://www.digit.in/features/general/the-origins-of-upi-road-to-a-cashless-society-50210.html,

accessed on 24-4-2024.
8. Carriere-Swallow, M. Y., Haksar, M. V., &Patnam, M. (2021). India's approach to open banking: some implications for financial inclusion. International Monetary Fund.
9. "Digital Payments, Bank Think: UPI will push India over the digital payments finish line" by Somya Patnaik, July 18, 2019, 12:01 a.m. EDT, https://www.americanbanker.com/payments/opinion/upi-will-push-india-over-the-digital-payments-finish-line, accessed on 20-4-2024.
10. https://ijcrt.org › papers › IJCRT2305935, accessed on 24-4-2024.
11. Kanishcheva, N. A. (2021, February). Current state of commercial banks in a digital economy. In International Scientific and Practical Conference "Russia 2020-a new reality: economy and society" (ISPCR 2020) (pp. 169-172). Atlantis Press.
12. Shahid, Mohammad. (2022). Exploring the determinants of adoption of Unified Payment Interface (UPI) in India: A study based on diffusion of innovation theory. Digital Business. 2. 100040. 10.1016/j.digbus.2022.100040.
13. Nandru, Prabhakar & Senthilkumar, S.. (2024). Exploring the Factors Affecting Mobile Payment Adoption Intention Among Women Street Vendors In India. SDMIMD Journal of Management. 41-52. 10.18311/sdmimd/2024/32806.
14. Odetayo, T. A., Sajuyigbe, A. S. & Adeyemi, A. Z. (2020). Financial Literacy and Financial Inclusion as Tools to Enhance Small Scale Businesses' Performance in Southwest, Nigeria, Finance & Economics Review, 2(3), 1-13. Doi: https://doi.org/10.38157/finance-economics-review.v2i3.164
15. Amin, Hanudin. (2007). Internet Banking Adoption Among Young Intellectuals. Journal of Internet Banking and Commerce. 12.
16. Nandru, Prabhakar & S.A., Senthil & Madhavaiah, C.. (2023). Adoption intention of mobile QR code payment system among marginalized street vendors: an empirical investigation from an emerging economy. Journal of Science and Technology Policy Management. 10.1108/JSTPM-03-2023-0035.
17. MAHLATSI, MK & CHINOMONA, E. (2020). Green supply chain practices and supply chain performance in the Beverage industry of South Africa. Journal of Contemporary Management. 17. 295-325. 10.35683/jcm20053.77.
18. Hussain, Altaf & Hussain, Muhammad & Marri, M. & Zafar, Muhammad Ali. (2021). Acceptance of Electronic Banking among University Students in Pakistan: An Application of Technology Acceptance Model (TAM). Pakistan Journal of Humanities and Social Sciences. 9. 101-113. 10.52131/pjhss.2021.0902.0117.
19. Shen, Yun & Agyekum, Francis & Reddy, Dr & Wallace, Damien. (2024). The welfare impact of financial inclusion: A research agenda (Forthcoming). Journal of Accounting Literature.
20. Dutta N, Deka J, Mazumdar M. Role of Panchayati Raj Institution in Eradication of Poverty: A Case Study from Kamrup District, Assam (India). Curr World Environ 2023;18(1).
21. Joshi, A., Kale, S., Chandel, S., & Pal, D. K. (2015). Likert scale: Explored and explained. British journal of applied science & technology, 7(4), 396-403.
22. Ha, K. H., Canedoli, A., Baur, A. W., & Bick, M. (2012). Mobile banking—insights on its increasing relevance and most common drivers of adoption. Electronic Markets, 22, 217-227.
23. Fan, Y., Chen, J., Shirkey, G., John, R., Wu, S. R., Park, H., & Shao, C. (2016). Applications of structural equation modeling (SEM) in ecological studies: an updated review. Ecological Processes, 5, 1-12.
24. Jöreskog, K. G., Olsson, U. H., Y. Wallentin, F., Jöreskog, K. G., Olsson, U. H., & Wallentin, F. Y. (2016). Confirmatory factor analysis (CFA). Multivariate analysis with LISREL, 283-339.
25. Lohana, S., & Roy, D. (2023). Impact of demographic factors on consumer's usage of digital payments. FIIB Business Review, 12(4), 459-473.
26. Moses, T., & Kim, S. (2015). Methods for evaluating composite reliability, classification consistency, and classification accuracy for mixed-format licensure tests. Applied Psychological Measurement, 39(4), 314-329.
27. Chau, P. Y. (1999). On the use of construct reliability in MIS research: a meta-analysis. Information & Management, 35(4), 217-227.
28. Gaskin, C. J., & Happell, B. (2014). On exploratory factor analysis: A review of recent evidence, an assessment of current practice, and recommendations for future use. International journal of nursing studies, 51(3), 511-521.
29. Duckworth, A. L., & Kern, M. L. (2011). A meta-analysis of the convergent validity of self-control measures. Journal of research in personality, 45(3), 259-268.
30. Susmel, L., & Taylor, D. (2008). The theory of critical distances to predict static strength of notched brittle components subjected to mixed-mode loading. Engineering Fracture Mechanics, 75(3-4), 534-550.
31. Farrell, A. M. (2010). Insufficient discriminant validity: A comment on Bove, Pervan, Beatty, and Shiu (2009). Journal of business research, 63(3), 324-327.
32. Groenier, M., Brummer, L., Bunting, B. P., & Gallagher, A. G. (2020). Reliability of observational assessment methods for outcome-based assessment of surgical skill: systematic review and meta-analyses. Journal of surgical education, 77(1), 189-201.

33. Patil, P., Tamilmani, K., Rana, N. P., & Raghavan, V. (2020). Understanding consumer adoption of mobile payment in India: Extending Meta-UTAUT model with personal innovativeness, anxiety, trust, and grievance redressal. International Journal of Information Management, 54, 102144.
34. Shahid, M. (2022). Exploring the determinants of adoption of Unified Payment Interface (UPI) in India: A study based on diffusion of innovation theory. Digital Business, 2(2), 100040.
35. Sumalatha, U., Prakasha, K. K., Prabhu, S., & Nayak, V. C. (2024). A Comprehensive Review of Unimodal and Multimodal Fingerprint Biometric Authentication Systems: Fusion, Attacks, and Template Protection. IEEE Access.
36. Armstrong, G., Adam, S., Denize, S., & Kotler, P. (2014). Principles of marketing. Pearson Australia.
37. Dang, T. T. N., Dao, T. H. T., Nguyen, V. H. T., & Ha, V. D. (2024). Understanding the moderating role of trust on continuance intention towards smartphone banking services: empirical evidence from Vietnam. Journal for International Business and Entrepreneurship Development, 16(1), 4-33.
38. Cigdem, H., & Topcu, A. (2015). Predictors of instructors' behavioral intention to use learning management system: A Turkish vocational college example. Computers in human behavior, 52, 22-28.
39. Kaur, P., Dhir, A., Singh, N., Sahu, G., & Almotairi, M. (2020). An innovation resistance theory perspective on mobile payment solutions. Journal of Retailing and Consumer Services, 55, 102059.
40. Yuan, S., Liu, Y., Yao, R., & Liu, J. (2016). An investigation of users' continuance intention towards mobile banking in China. Information Development, 32(1), 20-34.
41. Ooi, K. B., & Tan, G. W. H. (2016). Mobile technology acceptance model: An investigation using mobile users to explore smartphone credit card. Expert Systems with Applications, 59, 33-46.
42. Longyara, T., & Van, H. T. (2015). Diffusion of innovation in Asian: A study of mobile NFC (near field communication) payment in Korea and Thailand. International Journal of Managerial Studies and Research (IJMSR), 3(10), 36-42.
43. Agarwal, H., & Karim, S. F. (2015). An investigation into the factors affecting the consumer's behavioral intention towards mobile coupon redemption. Advances in Economic and Business Management (AEBM), 2(13), 1311-1315.
44. Barrett, P. (2007). Structural equation modelling: Adjudging model fit. Personality and Individual differences, 42(5), 815-824.
45. Dash, G., & Paul, J. (2021). CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting. Technological Forecasting and Social Change, 173, 121092.
46. Sharma, S., Mukherjee, S., Kumar, A., & Dillon, W. R. (2005). A simulation study to investigate the use of cutoff values for assessing model fit in covariance structure models. Journal of business research, 58(7), 935-943.
47. da Silva, W. R., Dias, J. C. R., Maroco, J., & Campos, J. A. D. B. (2014). Confirmatory factor analysis of different versions of the Body Shape Questionnaire applied to Brazilian university students. Body Image, 11(4), 384-390.
48. Gohain, P. B., & Jansson, M. (2022). Scale-Invariant and consistent Bayesian information criterion for order selection in linear regression models. Signal Processing, 196, 108499.
49. Albahri, A. S., Alnoor, A., Zaidan, A. A., Albahri, O. S., Hameed, H., Zaidan, B. B., ... & Yass, A. A. (2021). Based on the multi-assessment model: towards a new context of combining the artificial neural network and structural equation modelling: a review. Chaos, Solitons & Fractals, 153, 111445.
50. Farrell, A. M. (2010). Insufficient discriminant validity: A comment on Bove, Pervan, Beatty, and Shiu (2009). Journal of business research, 63(3), 324-327.